Chemical Week

April 5, 1958

Price 35 cents

The Middle East: Opportunity, but formidable obstacles for U.S. chemical investors . . . . . p. 20

Bad risk now, good buyer later. Chemical suppliers cultivate the "marginal account" . . . . . p. 31

No recession for research. CW survey shows most research budgets won't be cut in '58 . . . p. 35

Permeation: new liquid-liquid separation process is unveiled by American Oil Co. . . . . p. 55

Export downturn in the cards? Signs point to tougher competition in world markets . . . . . p. 65

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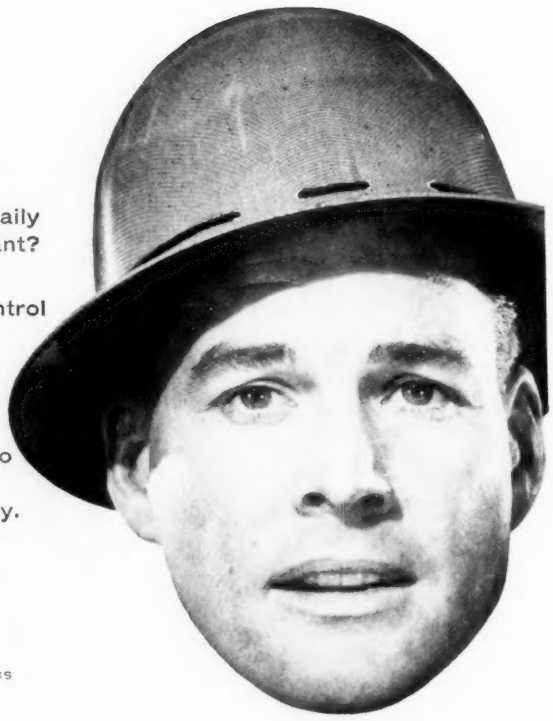

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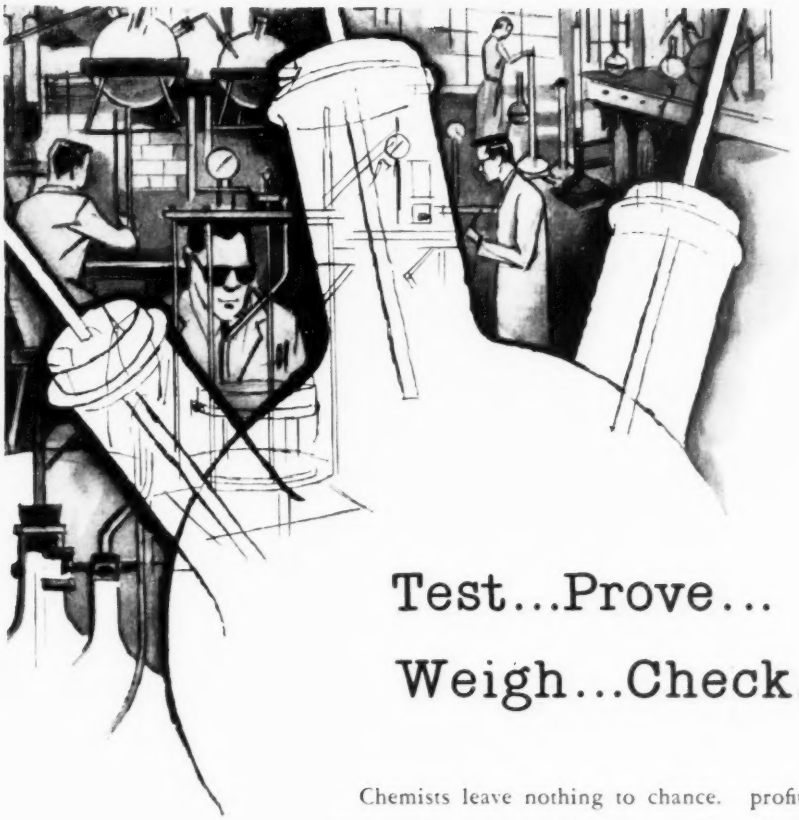

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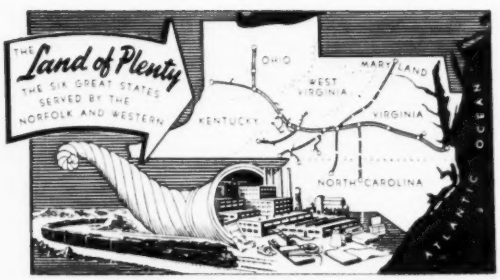

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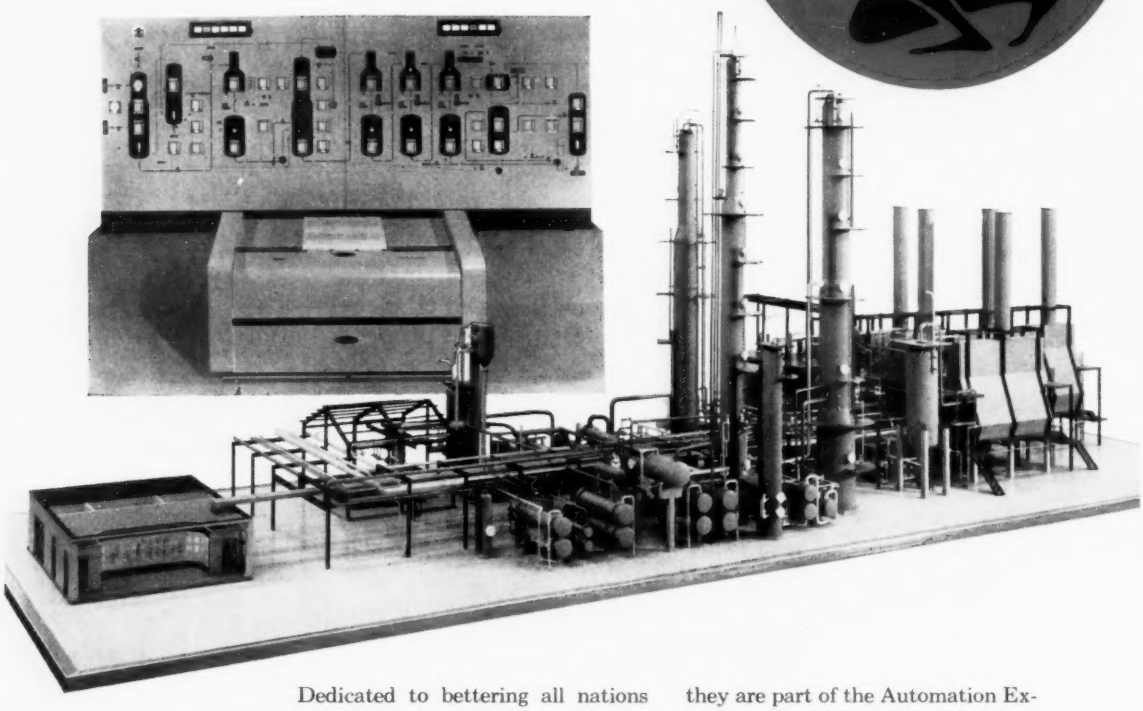
At the Brussels World's Fair



Dedicated to bettering all nations and peoples through better exchange of knowledge, the Brussels World's Fair provides a proper setting for the contributions made to mankind by petroleum and chemical engineering. Source of countless useful products, the petroleum and chemical industries have raised their own efficiency as well as world standards of living through technological progress. Typical are the advances made recently in automation.

This scale model of a Kellogg catalytic reformer and the replica of the Kellogg-designed control room demonstrate the trend to automatically controlled processing units. Together they are part of the Automation Exhibit at the United States Pavilion at Brussels. The scale model, built by Kellogg as a design tool for actual plant engineering and construction, was furnished by Kellogg. The graphic panel and data reduction console were built by Panellit, Inc.

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Chemical Week

TOP OF THE WEEK

April 5, 1958

- **Are chemical stocks now underpriced?** Current price levels suggest that investors may be taking shortsighted view of industry's potentials ..... **p. 23**
- **Chemical industry is in foreground as tariff debate** in Washington thunders toward its climax ..... **p. 24**
- **Inflation's effect on plant depreciation.** Survey shows that management wants to spell out the story to stockholders .. **p. 43**
- **Research is key to Cal Ink's growth plans.** Here's how it's going after more business in '58 ..... **p. 71**

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23 Weakness in current prices of chemical stocks: Is it consistent with their long-range earnings and value potential?

23 Floating "warehouse" stimulates fertilizer sales. IMC uses barge train to cut delivery time, freight costs.

24 Chemical trade group takes its stand in tariff battle: it's for "genuinely reciprocal" trade but against Presidential review.

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31 SALES
"Marginal accounts" can be nurtured into good-paying customers with chemical suppliers' help.

35 RESEARCH
Process companies' research budgets are spared economy axe in '58. Outlook: optimistic.

43 ADMINISTRATION
Inflation-corrected depreciation figures in corporate reports? Chemical makers favor the plan, new survey shows.

46 New worry for makers of consumer specialties: court ruling that expands interpretation of product-liability laws.

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Permeation—a new unit process for splitting hard-to-separate liquid mixtures—is unveiled by American Oil Co.

58 Oak Ridge starts up new research reactor for engineering studies of fuel and structural materials.

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65 MARKETS
U. S. chemical exports to Britain were up in '57. But expanded British facilities and recession pressures will shrink British market for U. S. chemicals.

71 SPECIALTIES
Stepped-up research effort backs California Ink Co.'s bid for sales growth.

78 CHARTING BUSINESS
Domestic mercury producers seek tariff help to maintain U. S. markets; Italy's the prime source of imported material.

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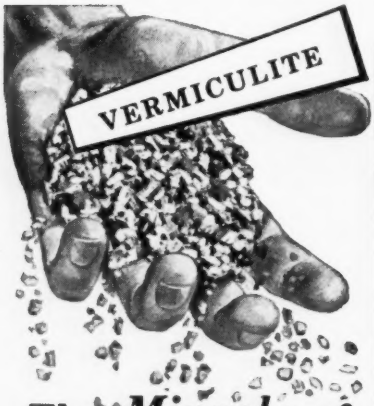

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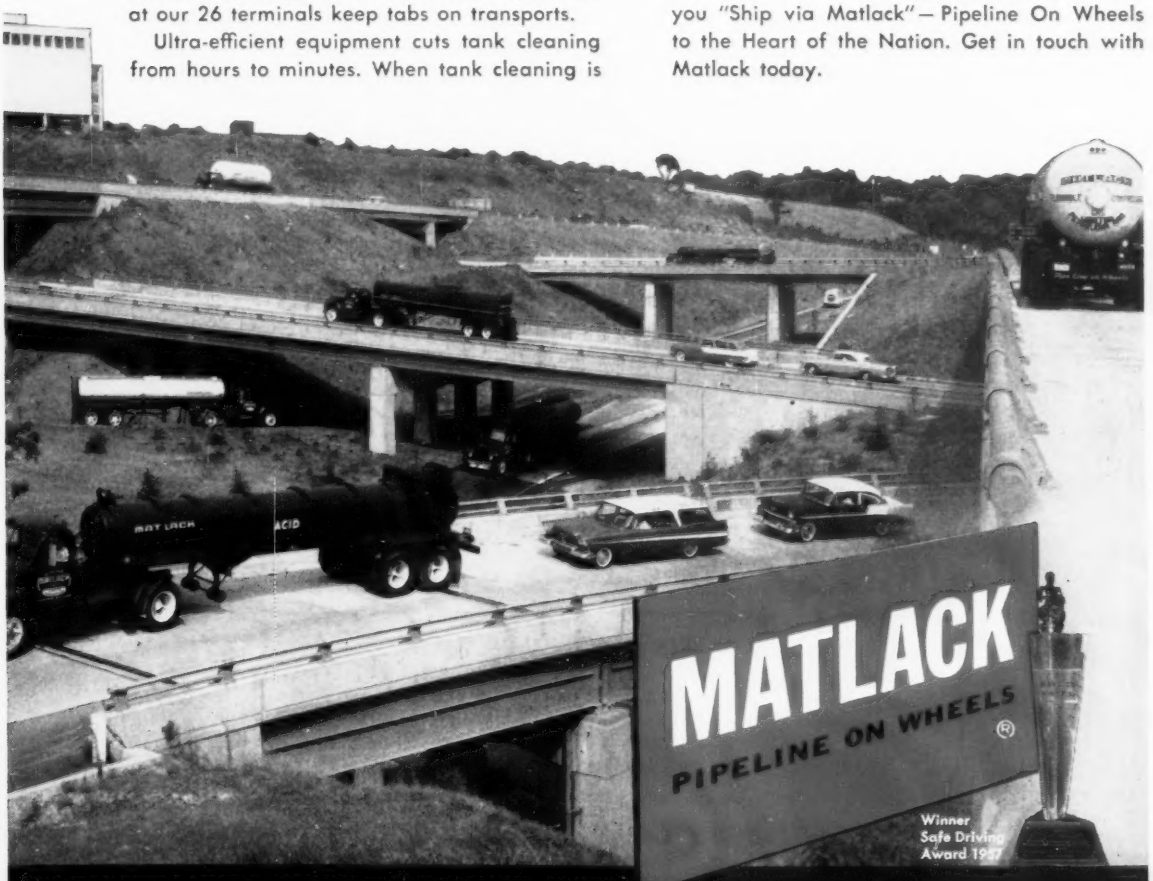

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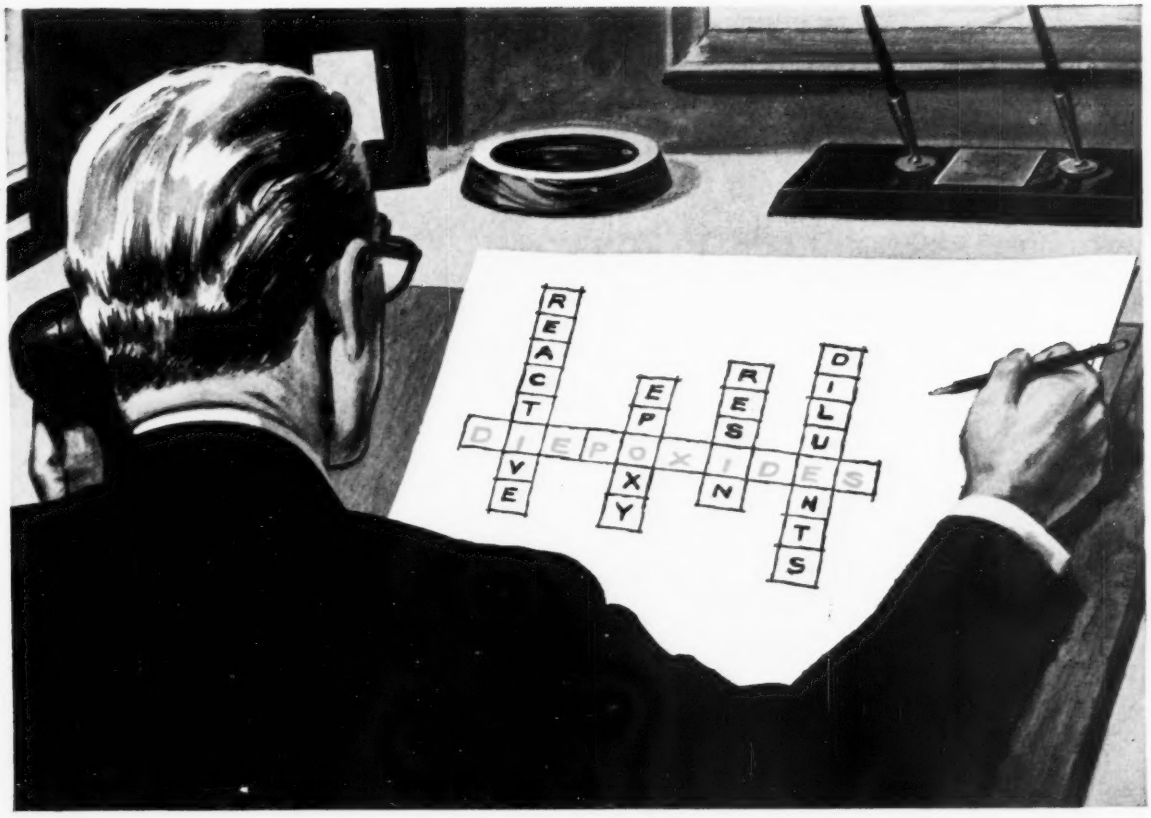

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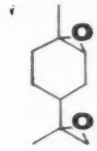

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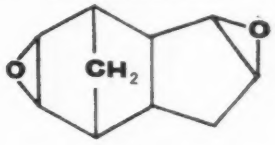

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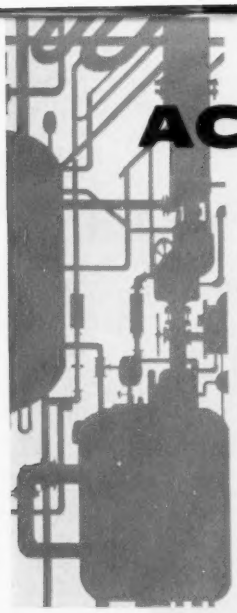

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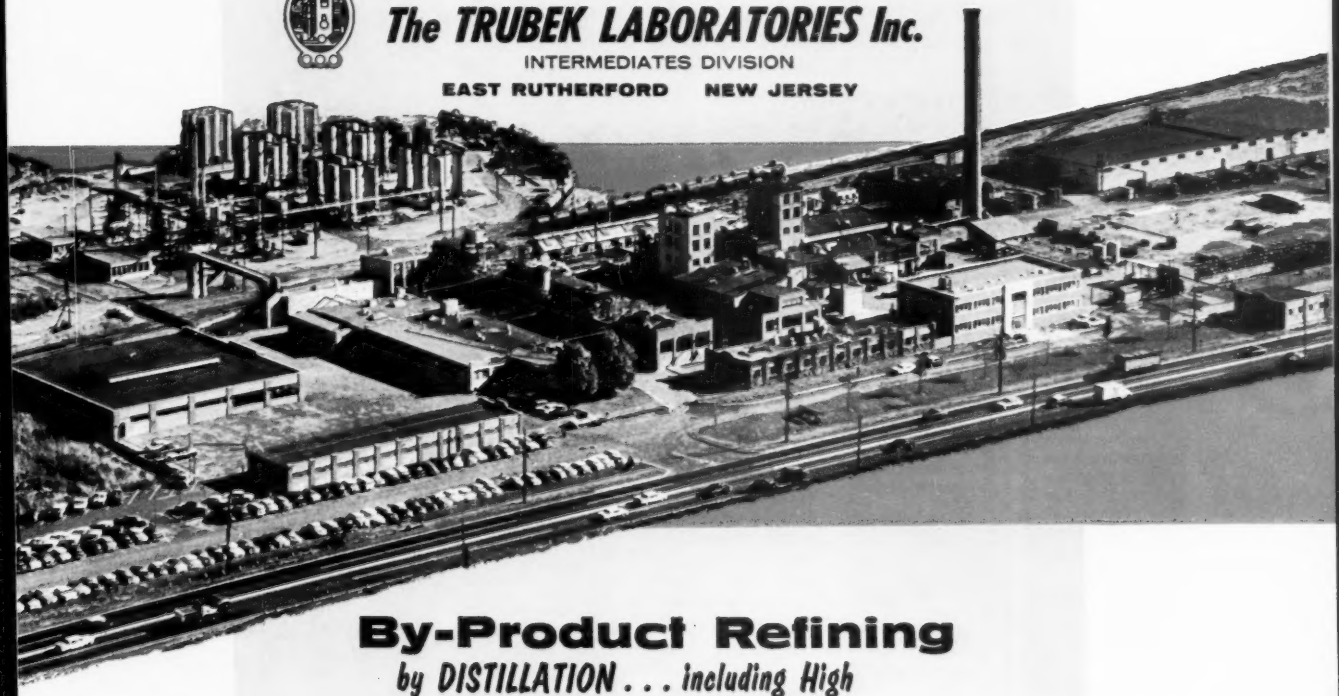

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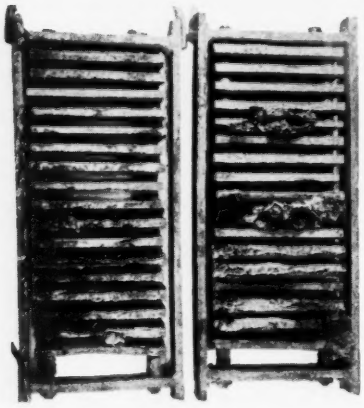
Combustion products from these fuels include a considerable amount of ash containing vanadium pentoxide, sodium and sulfur compounds, which have a low fusion temperature.

When this ash is liquid, it creates a fluxing action on the metals and high corrosion rates follow.

Since long field experience has shown all of the heat resistant alloy to be susceptible to this type of damage, an approach based on the addition of substances to the fuel oil to prevent the ash from becoming molten has been adopted.

Inco High Temperature Engineering Service conducts in-plant tests

Inco engineers—in cooperation with several Steam Power and Stationary Gas Turbine companies have conducted a series of in-plant tests in order to determine the behavior of certain high temperature alloys when exposed to Bunker "C" burned with or without additives.



Test racks after exposure

Each rack carried many specimens of different compositions, all precisely measured before installation. Corrosion rates are developed from these specimens by metallographic examination.

Corrosion results were obtained on both cast and wrought alloys as well as on some alloys with various coatings. The bar graph (below) shows the results of nine of the alloys tested. (Note for example, the performance of type 310 under the severe vanadium, sodium and sulfur environment.)

In general, data derived from this Inco High Temperature test points up the benefits of using additives when burning Bunker "C" fuel oil. It also provides a basis for material selection in terms of cost and length of service.

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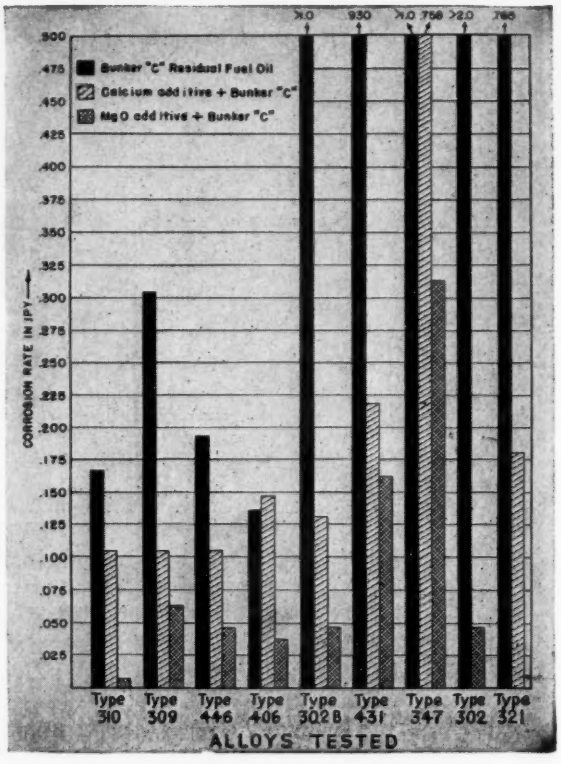

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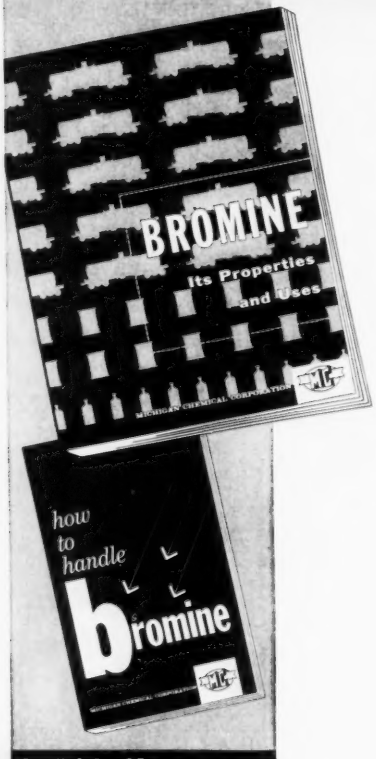

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Launching Pad paved with Harbison-Walker Castable Refractory

Business
Newsletter

CHEMICAL WEEK
April 5, 1958

Few companies have early '58 earnings that are higher than in the same period last year.

One not-surprising exception is in the booming pharmaceuticals field. Sterling Drug President James Hill, Jr., says that January and February sales and profits were higher than those in the corresponding months of '57. In its annual report to stockholders—mailed last Friday—Sterling tells of an 11.8% increase in net sales ($198.7 million) and an 11.2% gain in earnings ($18.8 million).

While Chemway Corp.'s '57 sales and earnings were down from '56 levels, the company reports that January and February volumes this year were 28% better than they were last year. President Charles Silloway expects the improved business will hold up through March as well, giving the company a record first quarter.

Mobay Chemical—an offshoot of Monsanto and Farbenfabriken Bayer specializing in urethane foam—reports a smashing 70% rise in sales in early '58. Sales Manager J. D. Mahoney attributes the big gain to "widespread acceptance of foams" in the furniture industry.

Victor Chemical, with '57 sales and profits slightly ahead of those in '56, is expecting a mild first quarter. Sales and earnings are currently lower than '57's. But President Rothe Weigel told share owners at last week's annual meeting that year-end sales will be "somewhat above" '57's and that earnings should be "satisfactory."

Hooker Electrochemical reports a drop in sales and earnings for the three months ended Feb. 28. After tax, net dropped almost 23%, to $1.8 million, compared with $2.3 million in the same period last year. Sales were off 11%, to $23.0 million. Board Chairman Lindley Murray and President Thomas Moffitt blame the decline on three factors: a decrease in general business; cancellation or postponement of orders from some large Eastern customers; and a strike at customers' plants in British Columbia, which forced a 2½-month shutdown at Hooker's Vancouver plant.

Monsanto's sales are reportedly running 13% below '57 sales. Earnings are also "substantially lower." Monsanto Board Chairman Edgar Queeny reports, however, that first-quarter earnings will adequately cover the regular 25¢ quarterly dividend. Queeny also told stockholders that Monsanto will sell $25 million in 4¼% debentures to an insurance company to help carry out a "somewhat curtailed" '58 expansion program.

•

And there's other expansion news this week:

• Hercules Powder will start building a large new unit on a 500-acre site near its Bacchus, Utah, explosives plant to produce solid propellents for long-range missiles. Included in the plan is a test bay designed to

test rockets with up to 1 million lbs. of thrust. The new plant will operate under the wing of Hercules' newly created Chemical Propulsion Division.

• Goodyear Tire & Rubber Co. has set April 15 as groundbreaking day for its $9-million polyester film plant at Apple Grove, W. Va. Production is slated to get under way by early '59. Contractor: Catalytic Construction Co. (Philadelphia).

• Merck is investing $2.2 million in a new fermentation plant and manufacturing unit in Buenos Aires. The new installations will augment Merck's existing plant there, will turn out esteroids and other products now manufactured in Merck's U.S. facilities.

• Olin Mathieson will start producing corrugated containers in a newly leased plant near Cincinnati. The lease, formerly belonging to the Luckenheimer Co., reportedly runs for 12 years, involves about $2 million in fees. Production is expected by mid-'58.

•

Meanwhile, the employment situation remains mixed:

In the highly industrialized Baton Rouge, La., area, Dow will cut personnel 50% for startup operations at its new Plaquemine ethylene plant because of "limited production levels." The cut follows close on the heels of Ethyl Corp.'s decision last week to lay off 400 workers at its Baton Rouge refinery. These workers, however, are expected to find jobs at the Orment alumina plant due to be operating soon.

But, in Pensacola, Fla., Chemstrand reports that because of renewed firmness of the nylon market it will rehire 30 employees laid off last month at its nylon plant. Moreover, Du Pont will call back 70-80 workers at its nylon works in Chattanooga, Tenn., will cancel furloughs planned for 52 others.

•

An explosion Sunday morning rocked Union Carbide's chemical complex in Texas City, Tex., destroying a two-story brick and steel building and killing three production workers.

The building, which housed one of Carbide's oxygen units, was the only production facility damaged. The company reports that the second unit was put into operation within two hours, thus holding production losses to a minimum. Cause of the blast, heard and felt as far as Galveston, wasn't yet known, and plant officials say it may take several days of probing to determine it.

One reason for the short casualty list was Linde's careful "disaster" planning *(CW, July 27, p. 26)*. Plant workers moved into the explosion area quickly and began clearing the debris, made it possible for the production units to return to operation speedily.

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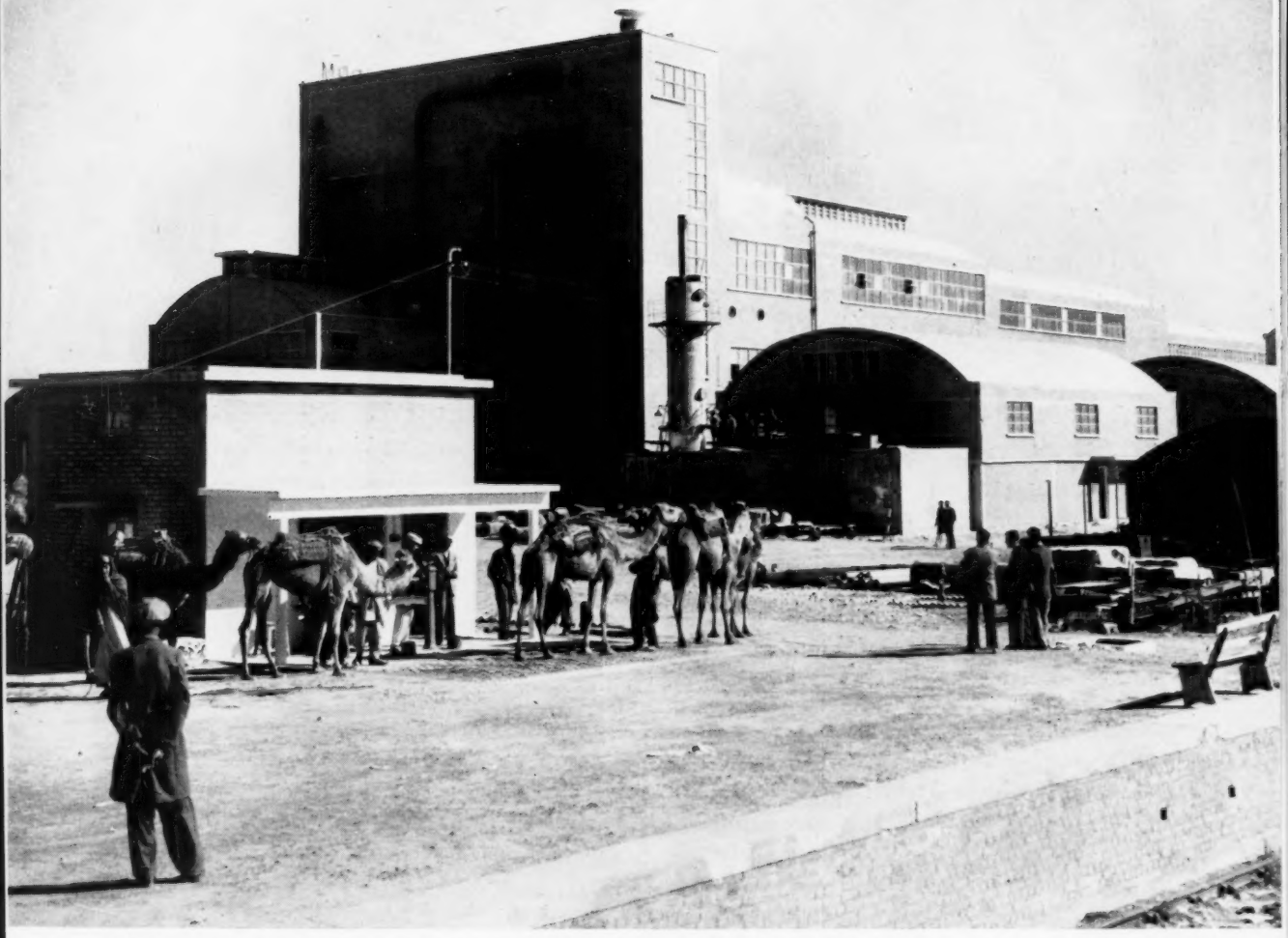
CW 4-5-58

Chemical Week

April 5, 1958



Modern and primitive meet head-on. In Pakistan, camel train brings a supply of straw to the Adamjee

In the Shifting Mid-East: Risk and

The record of recent events in the Middle East offers U.S. chemical firms ample justification for having stepped lightly—if at all—on Arab sands. But for all the tumult, several developments in the area may hold promise for American investors.

Development & Resources Corp. (New York) has won a contract from Iran's Plan Organization to complete preliminary work for a planned $59.3-million dam, scheduled for completion in 1960 in the southwestern Khuzestan region. The firm also holds P.O. contracts for a 9-million-lbs./-year polyvinyl chloride plant at Ahwaz, a 70-mile pipeline from the Agha Jari oil field to the PVC plant, and an 80-mile electric power line. D&R feels that its projects will spur development of a petrochemical industry "comparable to the one on the U.S. Gulf Coast."

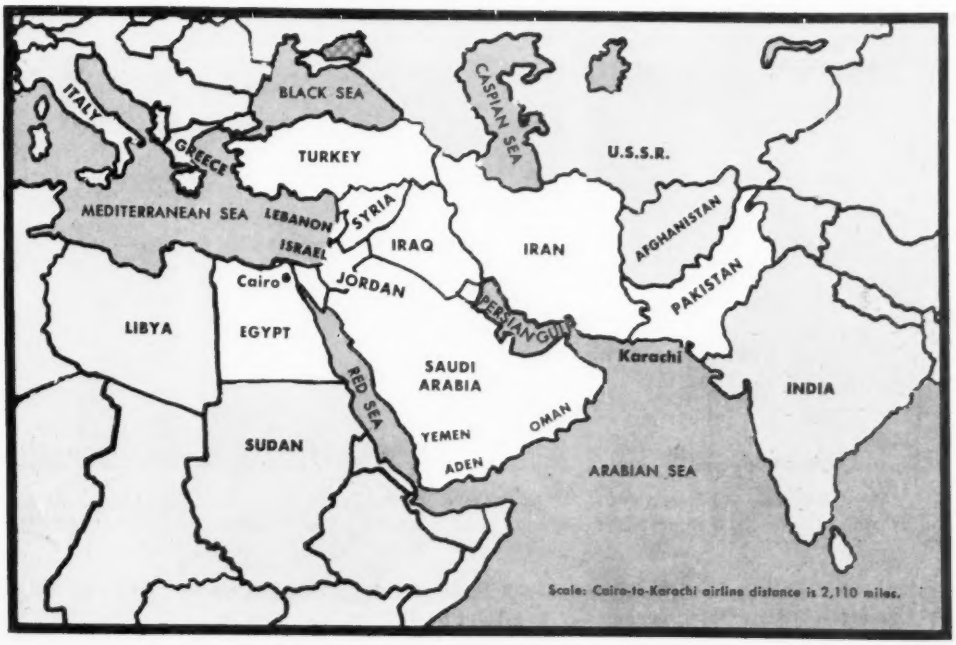
Several months ago two U.S. investment firms surveyed Iran, were favorably impressed. They're planning to discuss opportunities with U.S. chemical and pharmaceutical companies.

A Belgian concern, Union Chemique Belge, has also completed a survey. Its recommendation: a fertilizer plant (using natural gas as feed stock) to produce 150 tons/day of urea and 30 tons/day of ammonium nitrate. Bids will be called in about a month.

Recently passed investment guarantee laws are another good omen for U.S. investors in Iran.

Several other nations in the Mid-East are courting foreign investors. Lebanon, while not guaranteeing

In Mid-East (white area), politics and strife cloud investment opportunities.



CW PHOTOS—ALFRED WAGG

papermill.

Pakistan's Prime Minister (left), and Finance Minister back investment incentives.

Reward for Venturesome Investors

foreign investments against nationalization, does offer free currency conversion and capital and profit transfers. Lebanon levies no income tax on foreign money.

A Lebanese chemical industry, moreover, has just been born. The new, $3-million Lebanon Chemicals Co. has come onstream with sulfuric acid (17,000 tons/year) and superphosphates (50,000 tons). With its good supply of local capital and skilled labor, plus a strategic position for distribution, Lebanon may prove to be a strong magnet for U.S. capital. Political tensions are the big "if."

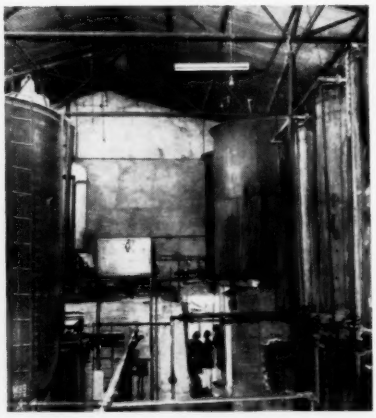
Iraq would be more attractive to foreign capital if it were not in friction with the Egyptian bloc. Oil royalties will pay for a five-year, $1.5-billion development plan, which includes a major dam and irrigation project. Development of considerable deposits of iron, copper, sulfur, gypsum, dolomite and calcite is expected eventually.

Brightest Star? Probably the most dramatic calls for foreign capital heard in the Mid-East these days are issuing from Pakistan. A *CW* reporter on the scene found ambitious government officials pushing industrialization in a nation where only 10% of the population lives in cities. Blocking progress of the young Moslem nation are problems familiar throughout the Middle East: shortage of capital and technical know-how, and popular hostility to intrusion of foreign firms.

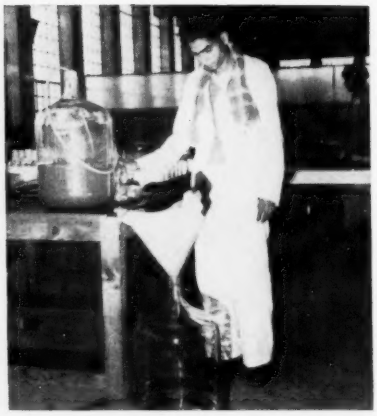
Pakistan's formula for answering this dilemma has been to allow foreign investors no more than a 49% share

Pakistan's Growing Process Industry

SUGAR: Premier mill (Nowshera) will help to cut the sugar import bill.



CAUSTIC: Adamjee complex includes caustic and chlorine facilities.



DRUGS: Ferozsons plant produces vitally needed pharmaceuticals.

in most Pakistani industries (including chemical), unless local capital cannot be raised. Moreover, management is expected to be turned over to nationals within 10 years.

Now, top officials tell *CW*, in exclusive interviews, they are ready to go much further. "We hope to have soon a tax-free, 3½% interest government development loan open only to foreigners," says Prime Minister Feroz Khan Noon. "We will guarantee investors the best bet in the world, including assurances that they may annually withdraw all trade profits, and, if the business is sold, the entire investment."

According to Finance Minister Amjet Ali, Pakistan "hopes to eliminate soon all taxes on foreign capital, including income taxes for those who take up residence."

Ali is most anxious to finance these projects: chrome refining, soda ash (from salt), mineral exploration and refining, oil and power prospecting, pharmaceuticals, petrochemicals, copper refining, "and any chemicals based on salt or using chlorine."

In the Ground: U.S. chemical firms accepting his bid will find considerable resources awaiting development. The Sui gas reserves were estimated in '55 to be at least 4 trillion cu. ft. Output of West Pakistan's high-sulfur content coal reached 520,000 tons in '55. Several large deposits are still undeveloped. Petroleum output was 73,731 imperial gal. in '56, and several American companies are exploring for new deposits.

Other mineral resources: chromite (23,000 tons mined in '56), copper (undeveloped), gypsum (250-million-ton deposits; 35,000 mined), limestone (776,000 tons mined in '56), rock salt (143,000 tons mined in '54), and iron, silica, sulfur and bauxite.

Off the Ground: After revising an overambitious development plan drawn up in 1950, three years after partition from India, Pakistan has set itself a new set of goals—the first five-year plan (1955-60).

Sulfuric acid capacity is slated to rise from 12,300 to 18,300 tons/year; soda ash, 25,000 to 36,000 tons/year; caustic soda, 6,000 to 26,000 tons/year; fertilizers, to 162,000 tons/year; rayon and cellophane, to 5,400 tons/year.

Whether Pakistan can meet these goals will depend in large measure on its success in attracting foreign funds.

Recently, the Pakistan Industrial Investment Corp. (PIIC) was set up to finance the import of industrial equipment and services. Of its 150-million rupee share-capital (about $31.5 million), 20 million rupees have been issued and subscribed, 40% by foreign investors. The investment group has won a $4.2-million World Bank loan in foreign currencies, and an interest-free, $30-million loan from the Pakistan government.

Pakistan is also negotiating with five Japanese firms (Kobe Seiko, Ishikawajima Heavy Industries, Shin-Mitsubishi Heavy Industries, Fuji Electronics, and Meidensha Electric) to build a $25.6-million, 150,000-tons/year urea fertilizer plant at Fenchuganj, East Pakistan.

Markets Still Shaky: Despite these promising developments, the explosive political situation is still the overriding factor in investment decisions concerning most of the Middle East.

And the economic picture is less than cheerful. Most of the Mid-East still limps along with a primitive economy. Basic industries are still mostly in the planning stage, and the poverty-stricken population offers a feeble market for chemical products.

In the few nations that are further along industrially, other problems prevail.

Turkey's industry has grown dramatically, but with this growth it has developed a critical foreign exchange shortage.

Israel still staggers under a severe foreign exchange shortage, has been running her economy on German reparations payments, foreign aid, and bond issues. The government, already ardently encouraging foreign investors, has recently announced further tax and profit conversion concessions. Still, the threat of war and an effective Arab boycott of firms investing in the country has probably turned away a number of investors.

Eyes on Pakistan: None of these problems will dissolve overnight. But industrial development will go a long way toward relieving the pressures of poverty and national jealousy. The Mid-Eastern world is watching Pakistan's bid for "noncolonial" capital. If it succeeds in getting it, and can boost its standard of living, other nations may feel more hospitable toward Western money and capitalism.

By the Bargeful

Barge transportation and a novel merchandising approach were merged last week by International Minerals & Chemical Corp. to sell the largest single shipment of plant food ever to travel the inland waterways systems.

IMC's novel wrinkle was to send a squad of salesmen ahead of the eight-barge train on its journey up the Mississippi River. They were to ferret out barge-quantity customers; at the landing point nearest the buyer, a barge was detached from the train.

The tow became a floating warehouse with some 10,000 tons of triple superphosphate and phosphate from the company's Florida mines. Salesmen, kept informed of the barge train's progress, arranged for distribution. IMC accepted no orders smaller than one barge load, but allowed two unloading points—thus, two customers could split one barge load.

Transportation savings stemming from the massive shipment, reports the company, amounted to $1 to $7/ton, depending on the customer's distance from the river landing-point. Material not sold directly from the barge train was stored at IMC distribution facilities.

Beside paring customer's freight costs, the IMC innovation yielded benefits to the company: excitement along the barge route stimulated sales.

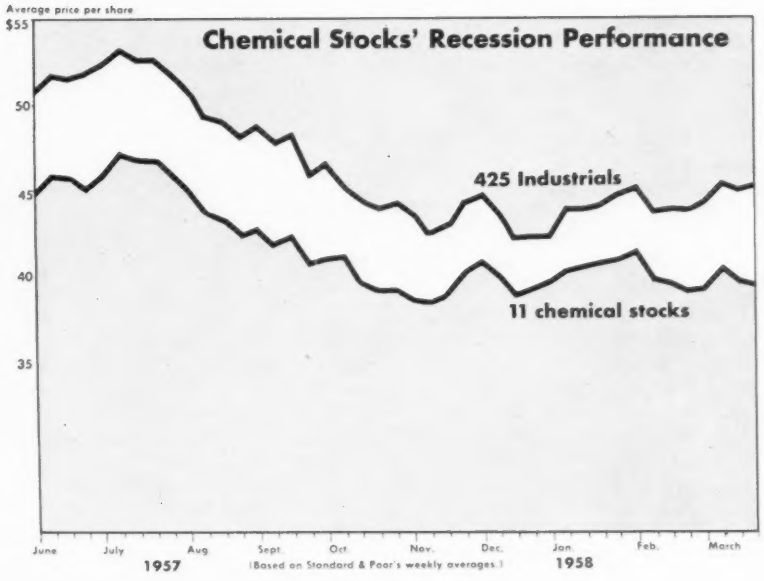
Prospectors' Setbacks

Prospects for development of phosphate deposits in North Carolina and bauxite deposits in Hawaii suffered setbacks last week.

In North Carolina, Bear Creek Mining Co. closed down its land office at Washington, apparently because of the North Carolina Council of State's policy to defer a decision on the company's bid for leases on state-owned land in Beaufort County.

Several other companies have indicated they are interested in the Beaufort County deposits, and the Council of State has been holding off to see if there will be competitive bidding.

In Hawaii, officials of Aluminum Co. of America and C. Brewer & Co. —the latter an important land holder in the territory—agreed that the bauxite there is "too poor in grade to be worth mining."



Bargain on the Big Board

Last week brought more bargain days for long-term investors convinced of chemical stocks' high potential for growth in value and higher earnings.

While prices of nearly all New York Stock Exchange listings have dropped during the past eight months of recession, chemical stock prices have sagged more than the all-manufacturing average. Since last summer, according to Standard & Poor's Corp. (New York), the decline for a group of 11 leading chemical stocks has been 16%, compared with a 15% skid for a group of 425 industrials *(chart, above)*.

Late-Winter Widening: Most of the widening in the spread between the two roughly parallel patterns has come in the past two months. Up to February, chemical stock prices had fallen at about the same rate as the industrial average. But soon thereafter, several of the "blue chip" chemicals had moderately sharp drops.

Du Pont was still off 13 points from its '58 high and Union Carbide had whittled 10 points off its high for the year as the market closed last week. Other companies making up Standard & Poor's chemical index also were priced well under February's quotes.

For stocks of the industry's two largest companies, there appears to be strictly temporary reasons for low prices. Like most industrial concerns, Du Pont and Carbide are affected by lower rates of production in such key industries as steel and autos. And prospective buyers of Du Pont stock are bearing in mind that the court-directed sale of Du Pont's holding of General Motors stock may have tax repercussions.

One rebounder is American Cyanamid, up 9½ points last week from its '57 low. This reflected the generally increasing favor of pharmaceutical stocks as well as Cyanamid's research progress on a new drug for treating leukemia.

Dividend Prospects: While chemical companies, as well as other branches of U.S. business, can't guarantee they'll keep paying dividends at present high levels, Wall Streeters believe most chemicals will hold up well.

Latest figures reveal that dividend payments in the chemical and allied products group rose during the first two months of this year *(CW Business Newsletter, March 29)*, and prospects of a continued rise are considered fairly good. Some exceptions, of course, may be in metals, synthetic fibers and sulfur, which have been hard hit by recession slowups.

Tariffs: Attack and Rebuttal

The chemical industry this week is striving to counteract charges hurled against it late last week in the bipartisan rally for the reciprocal trade program.

Both of the industry's leading trade associations—Manufacturing Chemists' Assn. and Synthetic Organic Chemical Manufacturers Assn.—are trying to show that the industry's position on trade and tariffs is constructive, realistic and in the national interest.

Immediately after Speaker of the House Sam Rayburn (D., Tex.) had criticized the chemical industry in a message read to the conference, MCA issued a vigorous rebuttal. Expressing "especial surprise" at Rayburn's charges in view of the industry's "well-known contributions to the welfare of this country in peace and war," MCA also accused Rayburn of misrepresenting the industry's position on the whole issue.

The chemical industry has not, as Rayburn said, sought "ever higher tariffs," MCA emphasized, and has "at no time opposed extension of the act."

SOCMA reiterated that it "supports genuinely reciprocal trade legislation and does not oppose selective tariff reduction measures." SOCMA noted that it had said essentially the same thing three years ago when Congress was considering extension of the Reciprocal Trade Agreements Act for the 1955-58 period.

Last Thursday's rally was sponsored by 128 business, professional, civic, labor and religious organizations as a means of drumming up grass-roots support for the Administration's proposal to extend the law for five more years. It was addressed by Republican and Democratic leaders headed by President Eisenhower and Adlai Stevenson.

That same day, SOCMA officially endorsed the Dorn bill (H.R. 11250), which would give Congress—instead of the President—the last word on Tariff Commission recommendations in escape clause and peril-point cases. Earlier, SOCMA President R. Wolcott Hooker had given the Dorn bill his personal endorsement while testifying before the Ways & Means Committee (*CW Washington Newsletter, March 22*).

"In our opinion," SOCMA stated in a letter to Committee Chairman Wilbur Mills (D., Ark.), "the Dorn bill does represent the most practical solution before the Congress for the creation and development of a truly reciprocal and mutually beneficial program of increased foreign trade with free nations, without injury to domestic industry, labor, domestic economy or national security."

The Rayburn message—read to the liberal trade rally by Rep. Frank Ikard (D., Tex.)—charged that chemical producers pose as champions of free enterprise but behave like "anti-capitalists." He asserted that in seeking "ever higher tariffs," the industry "strikes against the foundations of our national security."

COMPANIES

American Maize-Products Co. (New York) is reporting higher net income from lower sales revenue in 1957. While net sales dipped 0.6%, to $37.9 million, earnings jumped 21.2%, to $2.4 million. The more favorable profit margin, says President Theodore Sander, Jr., stems from a shift in sales emphasis to specialty goods, increased plant efficiency and somewhat lower prices for raw materials.

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International Salt Co. is planning construction of a new home office building in Scranton, Pa. Estimated cost of the one-story, 93,000-sq. ft. structure: $1.7 million.

•

Brown-Allen Chemicals (Staten Island, N. Y.)—producer of plasticizers, additives and chemical specialties for paint and printing-ink makers—has acquired the capital stock of Standard Magnesium Corp. (Tulsa, Okla.), secondary magnesium producer. The acquisition involved exchange of Brown-Allen common and preferred shares for Standard stock.

•

The Glidden Co. (Cleveland) reports "a marked improvement" in business in January and February. For the early months of its fiscal year that started last Sept. 1, Glidden's sales declined 10.2%, to $100.5 million, and earnings shrank 39.4%, to $2.1 million. But business picked up early this year, and February results were only slightly below those of the same month last year.

•

Stauffer Chemical Co. (New York) is leasing additional office space in Manhattan "to accommodate present and anticipated staff needs." The new office will house the Northeast regional staff of Stauffer's Agricultural Chemicals Division.

•

Allied Laboratories, Inc. (Kansas City, Mo.) will acquire all outstanding capital stock of Campana Co. (Batavia, Ill.) The present plan calls for Campana—producer of proprietary drugs and cosmetics—to operate as a subsidiary of Allied, with no changes in management, personnel or operating policies. Details of the exchange of stock were not disclosed.

•

Carwin Co. (North Haven, Conn.) is anticipating higher sales and earnings this year, particularly in the second half. Despite the recession and the expenses of organizing Carwin Polymer Products as a wholly owned subsidiary, the company boosted sales 8%, to $2.2 million, after-tax profits 37%, to $104,248. Since 1953, its profit margin has climbed from 0.8% to 4.9%.

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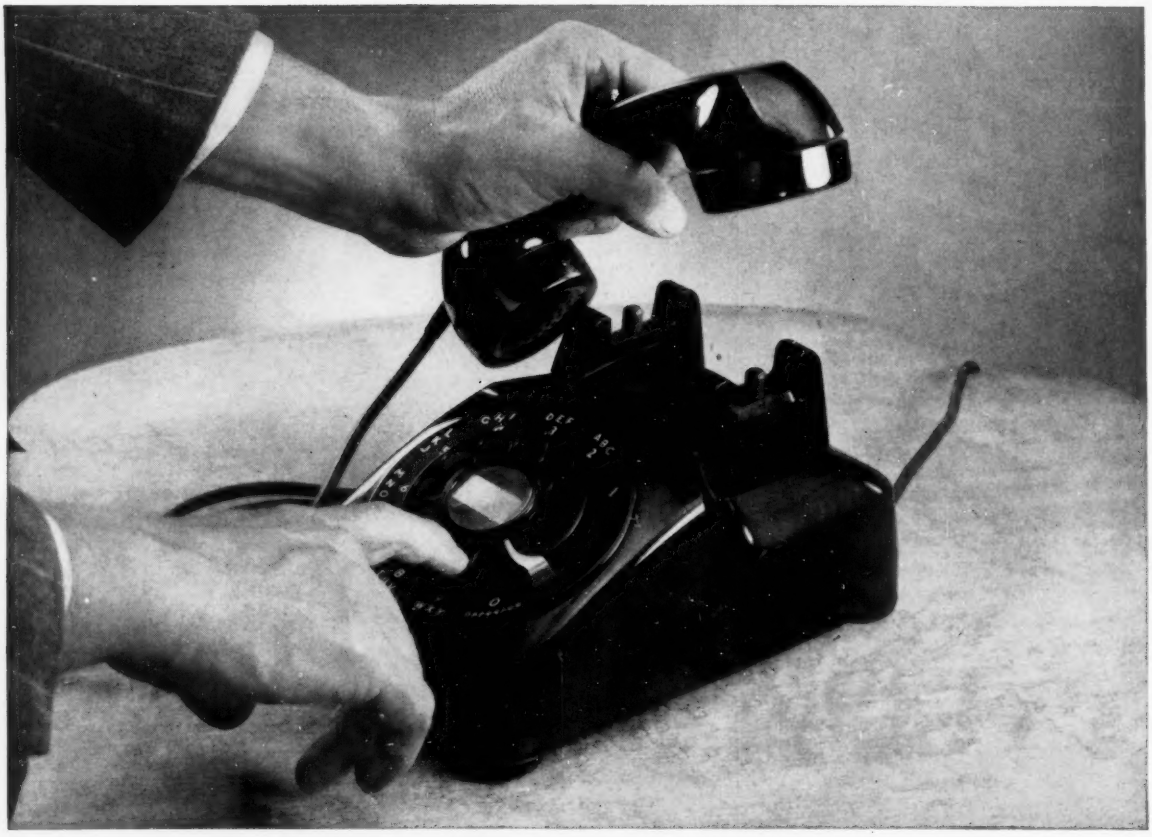

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Washington
Newsletter

CHEMICAL WEEK
April 5, 1958

In last week's Business Situation Report by the Commerce Dept.-Securities & Exchange Commission, there was some good news mingled with more of the bad.

The good news: most chemical process manufacturers expect their '58 sales will be higher than last year—in contrast with the 2% decline anticipated for manufacturing generally.

The bad: an analysis of an SEC survey that showed industry plans a $4-billion reduction from last year's record $36.9-billion capital-spending. The survey included continuation of previously started plant expansion, as well as the start of new projects.

The more detailed diagnosis of industry for the first time separated plant expansion already under way from new starts planned for this year. Major disclosures: manufacturers, in general, will start projects this year costing $9.85 billion, as against new starts last year of $14.05 billion. Durable-goods producers are cutting back to $4.02 billion in new projects from $6.42 billion a year ago. Nondurable-goods makers will start $5.83 billion in new projects, against $7.63 billion started in '57.

Total cost, when completed, of projects started in '58 will run to $280 million for stone, clay and glass firms; $400 million for paper and allied products; $1.31 billion for chemicals and allied products; $2.89 billion for petroleum and coal products; and $150 million for rubber products. The Commerce Dept.-SEC report gave no breakdown for projects started in '57—but the 30% over-all decline for all manufacturing in prospect in '58 almost surely reflects declines for each of these industry groups.

Manufacturers give a lot of attention to sales prospects in planning their capital-spending budgets—and chemical process executives figure they'll do better this year than last. Manufacturers of chemicals and allied products and of paper and allied products look for a 3% rise over their '57 take. Stone, glass and clay producers see a 1% gain. But manufacturers of primary nonferrous metals expect their sales to drop 6% this year, and petroleum and coal products manufacturers expect a 1% decline. Most of these industries fall in the soft-goods producer group, which expects an over-all increase of 1% over '57 sales. In contrast, the hard-goods industries—with stone, clay and glass producers the only exception—expect a 5% decrease.

Chemical process firms seem to be facing a dwindling supply of research chemists. A newly published study by the National Academy of Sciences-National Research Council seems to point to that conclusion. The Academy's Office of Scientific Personnel reports that the flow of doctorates in science from universities rose at an average annual rate of 7% from '36 to '55. But, output of Ph.D. chemists—after holding the 7% rate most of

Washington Newsletter

(Continued)

the period—has been on the decline since '50. It has leveled out at about 1,100/year.

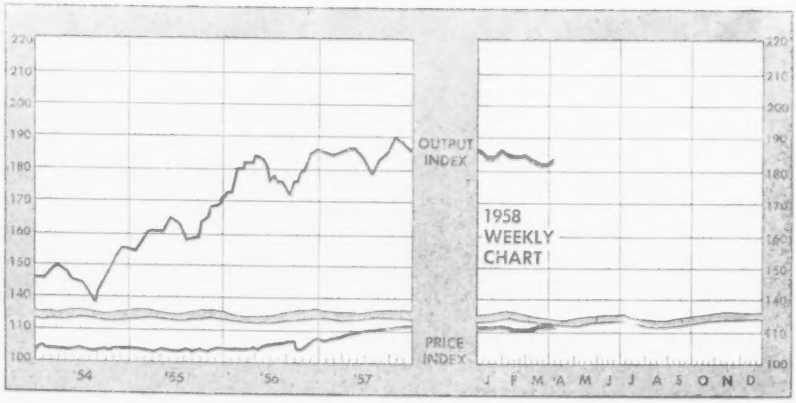
More recent figures, slated for publication in about two months, show a continuation of this downtrend, with '56 output of doctorates in chemistry falling below the '55 level and last year's total dropping even further. The academy calls this decline "the most striking feature" of its survey, but says it is at a loss to explain it. "The downward trend in chemistry," the report adds, "cannot be attributed to a shift of some people from chemistry to chemical engineering, as engineering itself has been on a plateau since '51."

•

The Labor Dept. plans to call on key chemical companies to participate in a proposed new survey that would give an up-to-the-minute count of employment in manufacturing industries, and hopes to get a go-ahead on the proposal within a few weeks.

The department would conduct a telegraph survey among 1,000 industrial establishments across the country, around the first Monday of every month. The figures could be tabulated quickly and an estimate of total manufacturing employment issued within a day or so.

The advantage to such a survey is its timeliness. The government's detailed report on employment takes three weeks to prepare and in many cases is out of date by the time it is issued. The new survey also would give special attention to such other key industries as auto, steel and machinery.



Business Indicators

WEEKLY	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	184.5	183.0	186.0
Chemical Week wholesale price index (1947=100)	111.0	110.9	108.6
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	39.41	39.63	41.27

MONTHLY Production (Index 1947-49=100)	Latest Month	Preceding Month	Year Ago
All manufacturing and mining	131	132	148
All chemical products	184	183	186
Industrial chemicals	194	195	207

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Suppliers help marginal accounts become better customers

This Customer	Received these tips	Result
Dry color	Bookkeeping suggestions	Customer expanded purchases from $500 to $9,500 a month
Plastic molder	Collection followup hints, financial assistance	Account grew from 20,000-lbs. to 100,000-lbs./month consumer, from 90-day to 30-day payer
Detergent formulator	Suggestions for diversification and new market outlets	Customer avoided going out of business, increased purchases
Contract dyer	Suggested time and motion studies, diversification	Labor force reduced 50%. Sales and profits increased so that customer is now buying 75% more materials from supplier
Plastic fabricator	Advised cost, price and profit analysis for items in product line	Account was near bankruptcy, is now solvent, buying larger amounts of resins

Changing Credit Risks into Good Prospects

Spurred by stiffening business competition, chemical suppliers are actively seeking marginal accounts—the above-average credit risks. The rewards can be substantial, say credit men, if these weak sisters are aided by judicious credit policies and sound financial counseling. This week, evidence of the trend is becoming increasingly apparent in many sectors of the chemical process industries.

For example, one large supplier gives fiscal advice—and sells chemicals—to 250-300 accounts in a year. Others, in writing new formal credit policy statements, are listing marginal account development as a credit department objective.

Dyestuff sellers, facing weak textile markets, find marginal accounts particularly necessary. Plastics producers see the approach as the only means of remedying the industry's widespread credit difficulties.

But perhaps the biggest spur to development of marginal accounts is the fact that credit risks often become sound, high-volume customers. In one case, intensive financial counseling helped convert a molder from a chronically slow payer, buying 4,000 lbs./month into an 80,000-lbs./month consumer with a prompt (30-60 days) account record (*see box*).

More Than Credit: Most suppliers helping marginal accounts are quick to point out that giving excessive credit is not good business. The aim of the marginal-account policy is to strengthen the customer to the point where he is no longer a credit risk. And, more than extending credit, that means providing sound financial advice to the customer who says that he wants it.

According to credit men, this advice is classified into these broad categories:

• Cost accounting data. Many marginal accounts prepare financial data too infrequently, do not know how their costs, sales and profits are doing on a monthly basis. Few, one credit manager told *CW*, know their true operating costs, or realize that increasing sales does not necessarily mean increasing profits. Credit men frequently help the customers install good cost accounting systems.

• Ways to increase working capital. Undercapitalization, especially in the plastics molding trade, is a common problem of the marginal account. Credit men steer small customers to sympathetic banking sources, help prepare financial statements in a way most likely to win a loan from the Small Business Administration.

They also help them get credit from other suppliers, suggest ways to gain tax advantages, suggest inventory reductions, study feasible ways to finance capital expansion. They occasionally assist in setting up bill

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collection systems — some large suppliers now even assist customers in appraising the credit risks of firms the customers sell to.

• Ways to diversify. Marginal accounts sometimes depend on one specialty for a livelihood, face failure when demand from that source slows down. Chemical credit men sometimes suggest diversification, arrange to have others suggest new markets or products to the account.

Tact and Skill: Although credit executives frequently give advice, few offer it unless the customer requests it. Marginal accounts, they say, must be carefully encouraged to confide in their suppliers. Candidness, on the part of the account, often encourages a supplier to give aid, which is usually given in the form of suggestion, never an order or a demand.

Not all marginal accounts qualify for financial counseling. There must be need for such advice, and reputation and ability of the account must be of high order. His product line, break-even point, growth potential, financial position and a variety of other factors are considered. And his value to the chemical supplier must be weighed against the cost of providing help. The supplier's profit margins on the product sold to a marginal account are also considered important.

Risk and Hazards: The big problem suppliers face in extending credit and advice is the effect such policy has on the nonmarginal account. Often, strong customers bitterly resent aid being given to marginal operators who are often competitors. To sidestep this difficulty, suppliers concentrate on helping those accounts that are promoting the welfare of the industry.

That the proffered advice may turn out to be incorrect or misinterpreted is a constant worry to suppliers. Many credit men believe, however, that much of the counseling given (e.g., install bookkeeping) can't be harmful. Nevertheless, because of such problems, some credit executives take a conservative view of assisting marginal accounts. They add that giving advice does not produce a lasting loyalty, that the sales force still must "sell." Yet, if the business potential is there, even conservative credit managers agree that marginal account development is worth at least a look—if not a try.

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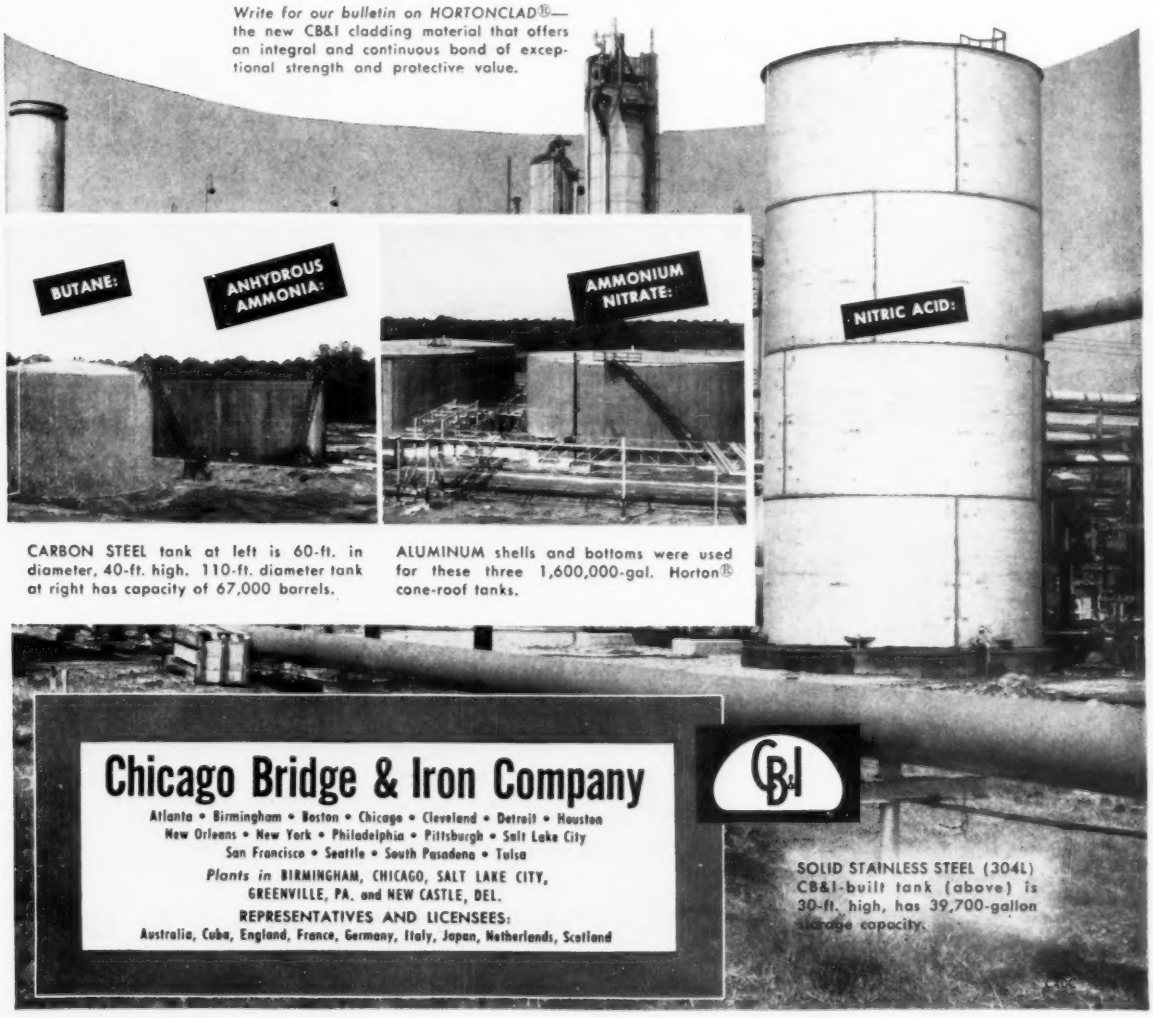

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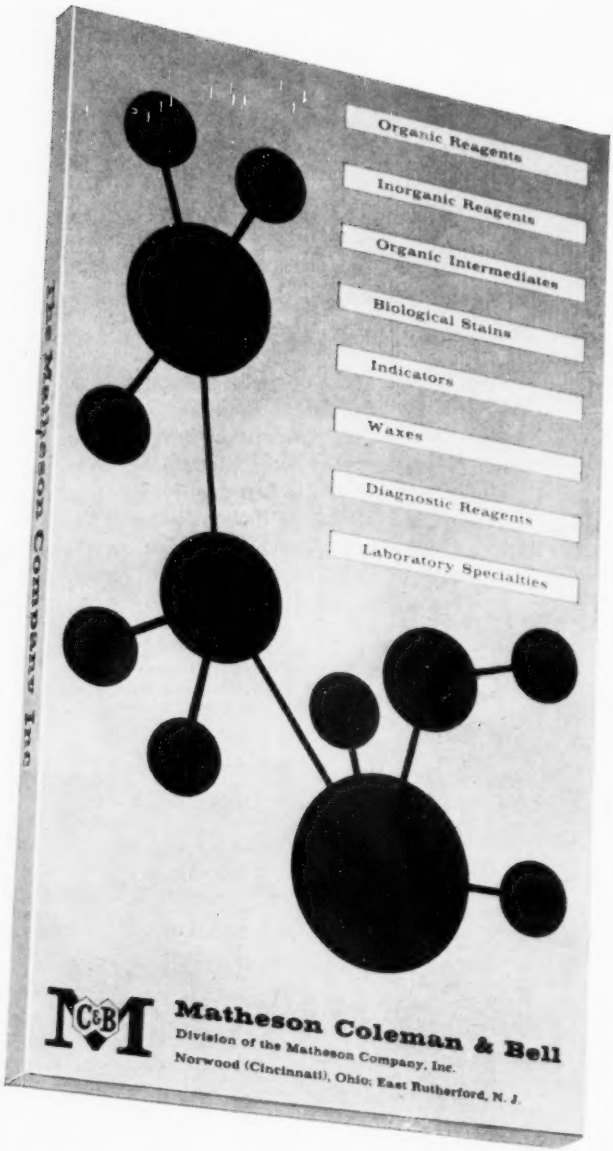

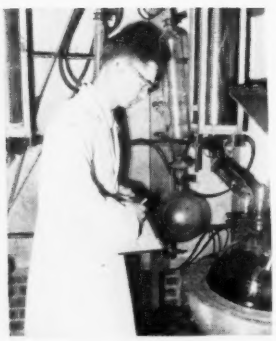

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Research Budgets Ride Out Business Dip

Few research budgets—and staffs—will get recession-prompted cuts this year (see chart, right) and most will be fatter in '59. That's the consensus of CPI firms replying this week to a new CW nationwide survey of research spending.

Some 84% of firms responding to the survey contemplate maintaining '58 budgets and upping them in '59. The majority (70%) will not cut back planned capital expenditures for research this year. And 72% will increase the size of their staffs—probably on a highly selective basis, aimed at recruiting top-quality researchers.

Profiting from the Slump: Some research directors feel that even these "lean" months can be turned to profit. One comments, "While some 'fat' can be cut [from research budgets], I believe now is the best time to do research and the worst time to cut."

Another reports, "I think it [the recession] is good. We're able to get some needed additional staff members of a bit higher caliber than during some recent periods of lush spending."

No Time to Halt Research: Others explain why the business cycle won't affect their research outlays. A pharmaceutical research vice-president says, "In our industry, I would expect an increase in research effort during the next two years, regardless of happenings to the general economy."

One respondent cautions, "Industry must not cut back research. It must show courage, imagination and confidence in the future through research. A cutback in research, however modest, will also confuse and discourage the development of future scientists."

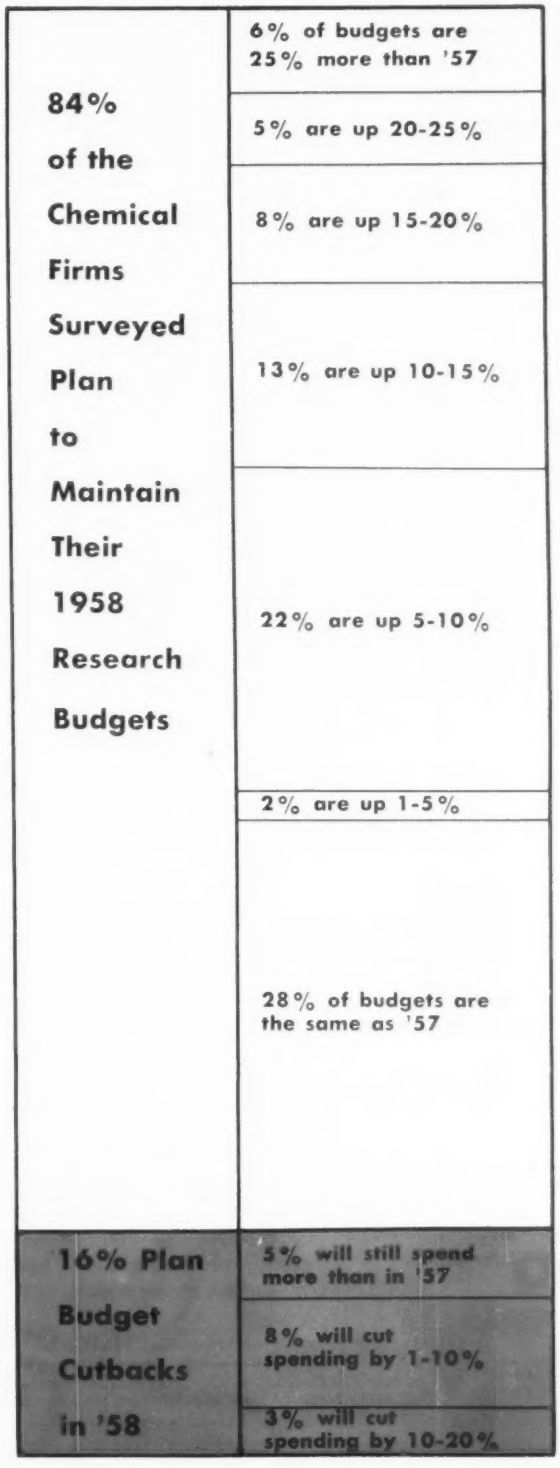
Still another research director admits, "The situation is erratic and unpredictable." (His company upped research expenditures 10% this year and will spend more in '59.)

A Southern research director, facing a tighter budget, appears somewhat displeased with his firm's attitude: "In the present situation," he avers, "I am reminded of the saying: 'It is amazing how gloomy a person can be if he really puts his mind to it.' Things are difficult, but not so difficult as the excitable members of the community make out."

Manpower Surfeit? A Philadelphia colleague, expecting budget cuts both this year and next, predicts: "The industry's so-called shortage of chemists will undoubtedly disappear in '58."

That's the opinion, too, of a Midwestern respondent who remarked, "The hue and cry about a technical manpower shortage is apparently misrepresentation. I believe this will result in unionization in many areas."

Significantly only 5% of all respondents reported an increase in voluntary turnover among research per-


84% of the Chemical Firms Surveyed Plan to Maintain Their 1958 Research Budgets
6% of budgets are 25% more than '57
5% are up 20-25%
8% are up 15-20%
13% are up 10-15%
22% are up 5-10%
2% are up 1-5%
28% of budgets are the same as '57
16% Plan Budget Cutbacks in '58
5% will still spend more than in '57
8% will cut spending by 1-10%
3% will cut spending by 10-20%

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RESEARCH

sonnel—despite general, continued research expansion.

Little Trimming of Basics: Although a preponderance of companies surveyed reported that they do basic research, only 2% indicated they would ease up on this activity. The majority are in accord with the view displayed by Congress, which has just decided to go along with higher federal outlays for basic research in chemistry and other sciences. Lopping off $25 million earmarked for construction purposes, a House Appropriations Subcommittee okayed $115 million of the $140 million sought by the National Science Foundation for its fiscal '59 programs.

The money includes $107 million for basic research grants, pre- and postdoctoral fellowships and programs for training high school science and mathematics teachers. About $85 million of this total will go for research grants and fellowships—nearly three times the amount being devoted to such programs this year. Also, it includes $8 million for new programs such as a proposed $6-million revision of high school chemistry courses.

Independents Hurt: While company-owned research organizations apparently haven't felt the economy axe to any marked degree, independent research labs aren't faring quite as well. Stanford Research Institute, for example, reports that curtailments in defense contracts caused a 5% reduction in SRI personnel in the last half of '57. (Nevertheless, SRI is embarked on a $2.5-million expansion.) Horizons Incorporated (Cleveland), Battelle Memorial Institute (Columbus, O.) and other independents reportedly have been similarly hit by loss of government contracts.

In the long run, research money will probably continue plentiful, although it will be more selectively distributed. Research will thrive where management pursues a steady policy, relatively undaunted by external economic pressures.

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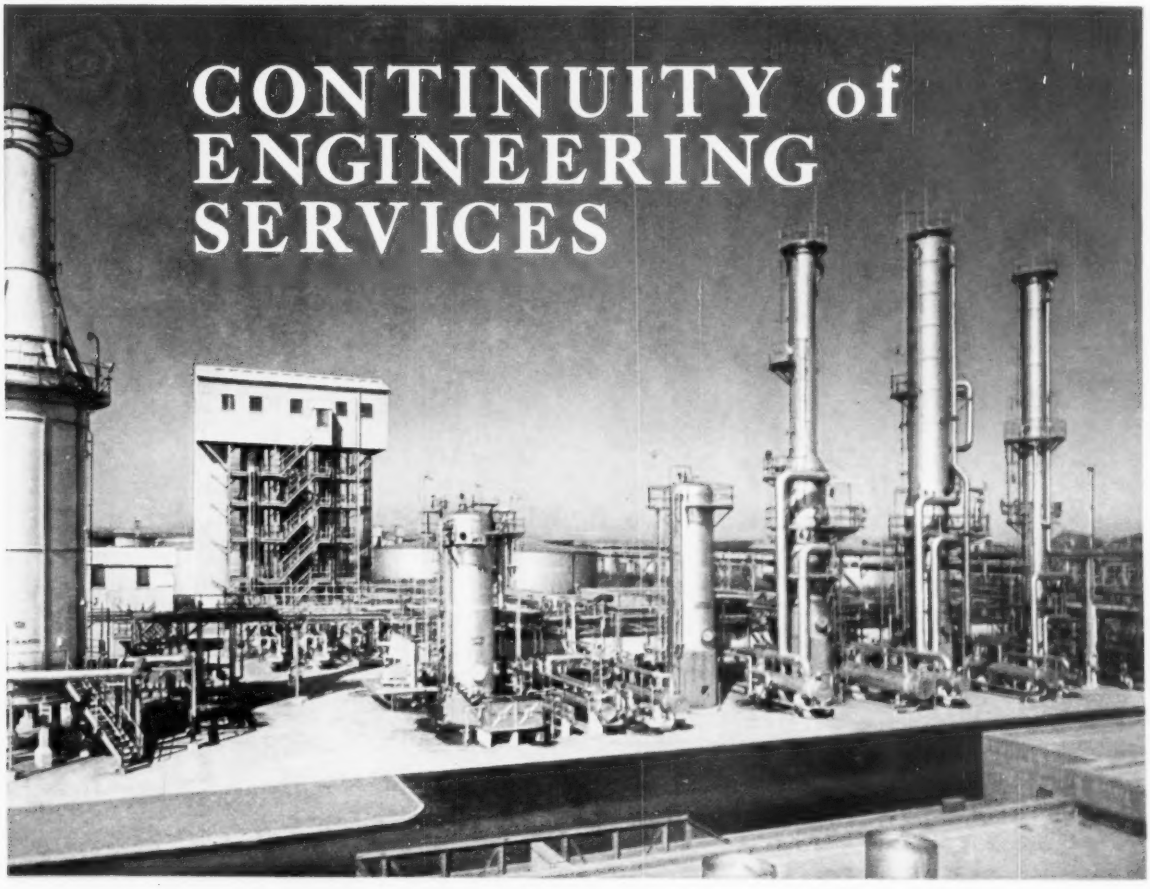

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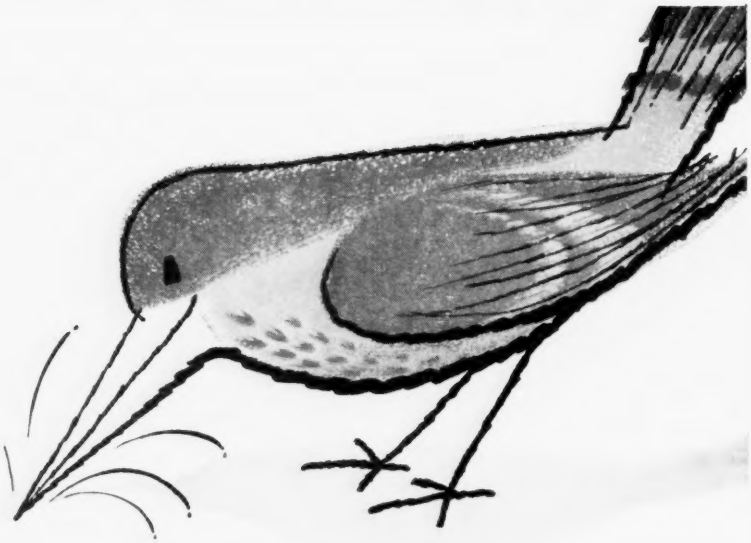

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REPORTS

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• Thirteen Atomic Energy Commission reports including: A Uranium Dioxide-Bismuth System as a Reactor Fuel (KAPL-1877, 75¢); Progress Report on Raw Materials for July '57, Chemical Technology Division, Oak Ridge National Laboratory (ORNL-2388, 75¢); Irradiation Effects on Zirconium-Clad Uranium-Zirconium Fuel Plates (ANL-5825, 50¢); Irradiation of Organic Reactor Coolants in Dynamic Systems (HW-53717, $1.25); Reactions Yielding Volatile Oxides at High Temperatures—Free Energies of Gaseous Al_2O, ZrO, ThO, TaO, ZrO_2, ThO_2, TaO_2, UO_2, and WO_3, Jan. '58 (ANL-5824, 75¢); A Test for Solvent Quality (DP-237, 50¢); The Determination of Fluoride in Plutonium Fluorides (DP-247, 50¢); Separation of Uranium from Diverse Ions: Study of the Hexone Liquid-Liquid Extraction System (IDO-14415, 75¢); The Oxidation of Mercury by Nitric Acid (IDO-14423, 75¢); Determination of the Burnout Limits of Polyphenyl Coolants (IDO-28007, $2.50); The Determination of Uranium in UO_2-Al_2O_3 Fuel Elements by X-ray Emission Spectrography (KAPL-1879, 50¢); Purification and Physical Properties of 1,1,2,2-Tetrafluorodinitroethane (UCRL-4978, 50¢); Oxidation of Uranium Tetrafluoride in a Moving Bed Reactor (ORNL-2409, $1).

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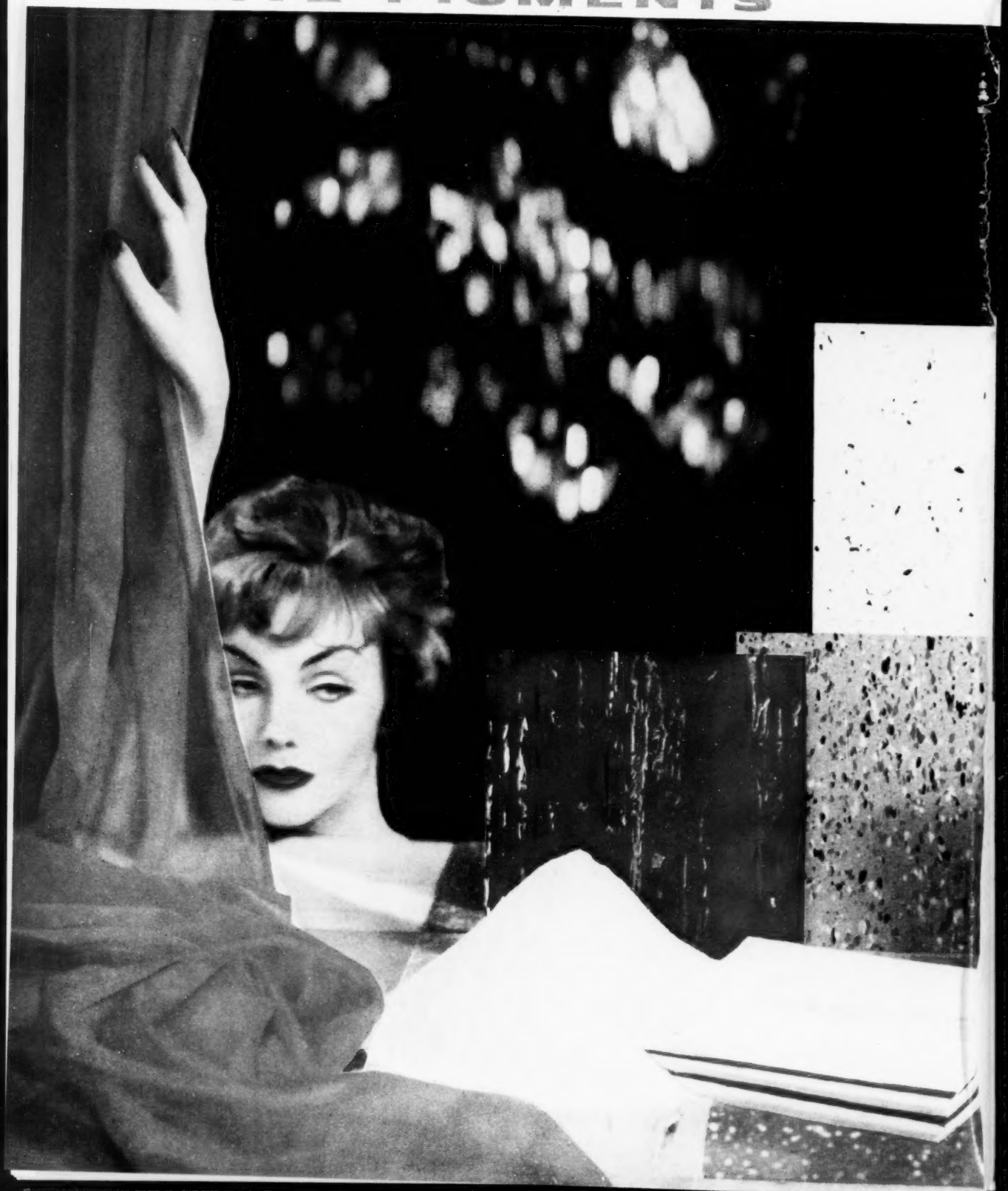
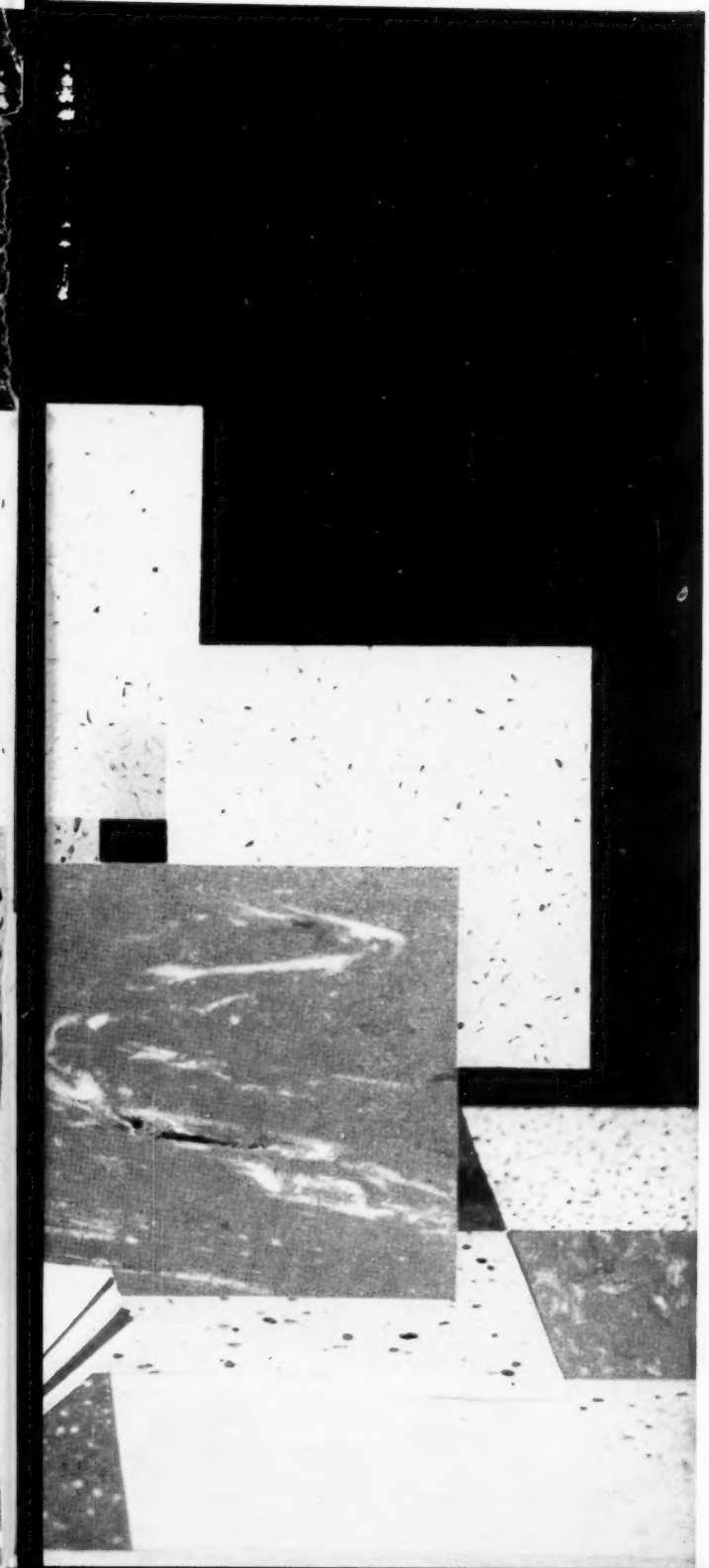


high style in floor tile



The sure and efficient way to produce bright modern whites, livelier colors and fashionable pastels in floor tile is to use TITANOX* white titanium pigments.

The full TITANOX line presents the right pigment to make it easier to keep color effects uniform in asphalt, rubber or vinyl tile. And this applies to roll type floor coverings too—linoleum and felt base.

Floor coverings are only one of many products that draw upon TITANOX white pigments for sure and efficient brightening, whitening and opacifying. Paints that look and cover better... papers that are more opaque, more legible and more attractive for packaging... roofing shingles that are lighter in color and more heat reflecting, to name a few.

If you have any white pigmentation problems, regardless of your product, our Technical Service Department will be glad to work with you. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; offices and warehouses in principal cities.

TITANIUM PIGMENT CORPORATION

Subsidiary of National Lead Company

*TITANOX is a registered trademark for the full line of titanium pigments offered by Titanium Pigment Corporation.

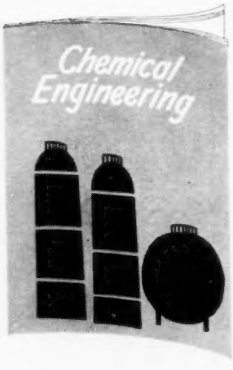
TITANOX

5726

PHOTO COURTESY HELENA RUBENSTEIN, INC.

The Chemical Engineer keeps 83 million women beautiful

Soaps and perfumes, lipstick and cosmetics . . . more contributions to the better life made possible by the Chemical Engineer and his technology . . .



In industries using chemical procesess and techniques . . . their products range from explosives to cosmetics . . . the one unifying influence is the active presence of the chemical engineer and his technology. These industries buy big . . . a third of all capital goods, $46 billion in raw materials and fuels . . . and it's the chemical engineer who recommends and specifies as processing needs turn into orders. Sell him *first* and you've sold the common buying denominator of the Chemical Process Industries.

Only one magazine, CHEMICAL ENGINEERING, is aimed exclusively at the chemical engineer, whatever his function. And it's preferred by a solid 3 to 1 margin among chemical engineers in all functions, in all industries. This year you can talk to them with a greater frequency, timeliness and impact than ever before. CHEMICAL ENGINEERING, A McGraw-Hill Publication, 330 West 42nd St., New York 36, N. Y.

Published every other monday
for Chemical Engineers in all functions

Chemical Makers Vote* to Show Inflation's Effect

Question	Chemical Industry and Paper Industry Percent in favor	Petroleum Industry Percent in favor	Food, Beverages, Drugs, Tobacco Percent in favor	Mining and Metals Percent in favor	All Business and Industry Percent in favor
In view of changes in price levels, should current dollar cost of depreciation be reflected in corporate reports to stockholders?	80	42	48	83	69
Would you prefer to disclose it . . .					
by footnote?	50	0	59	46	46
by supplementary income statement?	6	25	8	9	13
by adjusted income statement?	31	75	25	27	30
by adjusted income statement and balance sheet?	13	0	8	18	11
If you favor reflecting such changes, should there be a mandatory requirement for disclosing the amount of current dollar cost of depreciation?	57	20	71	40	49
Would you favor reporting net income to reflect current cost depreciation, if such depreciation were acceptable for tax purposes?	74	70	73	67	77
Would you favor reporting it, even if such depreciation were not accepted for tax purposes?	11	22	4	38	27

*Source: American Institute of Certified Public Accountants.

Depreciation: Time to Tell Stockholders

Attesting to management's growing concern with the high cost of plant replacement—and to the need for impressing stockholders with the seriousness of this matter—is the latest survey by American Institute of Certified Public Accountants. The study shows that many executives in the chemical industry would like to see inflation-corrected depreciation figures* in corporate reports to stockholders.

In the survey, it was assumed that an acceptable way to measure the effect of price-level changes was available. Some 406 individuals were surveyed, representing 331 business firms (and 75 educators). Of the businessmen, about 25 represented makers of chemicals, paper and allied products, 17 were petroleum processors, 18 represented mining and metals industry, and 27 were in the food, drugs, beverages and tobacco industries.

Varied Opinion: The survey indicates that there is considerable difference in how executives in chemical process industries regard the need for disclosure of depreciation figures—chemical processors and papermakers favor it; food, drug, beverage and tobacco producers as well as petroleum producers, oppose it.

In general, chemical makers went along with other businessmen (*see table*)—agreed that:

- Current dollar cost of depreciation should be disclosed in reports.
- Such data should be made supplemental to regular figures, preferably as a footnote.
- Disclosure should be mandatory.
- More support for reporting the data could be found if current dollar cost of depreciation were deductible for income tax purposes.

What effect AICPA's survey may have on depreciation rules and legislation is speculative. There's this to be noted, however: the survey is significant evidence of chemical management's growing concern over inflation's inroads on capital investment and management's need to make sure that stockholders understand this aspect of inflation.

*Depreciation today is generally expressed in terms of dollar cost at time of investment.

Life on the Chemical Newsfront

CLEARER, WHITER POLYESTERS for reinforced plastics, which are rapidly finding broader use in structural and decorative applications, can now be made with AERO® *phthalic anhydride* in its new whiter flake form. Cyanamid's phthalic anhydride offers high purity and water-whiteness for transparent or translucent polyesters. It provides exceptional clarity as an ideal base for tinted or white materials.

(Industrial Chemicals Division)

*Trademark

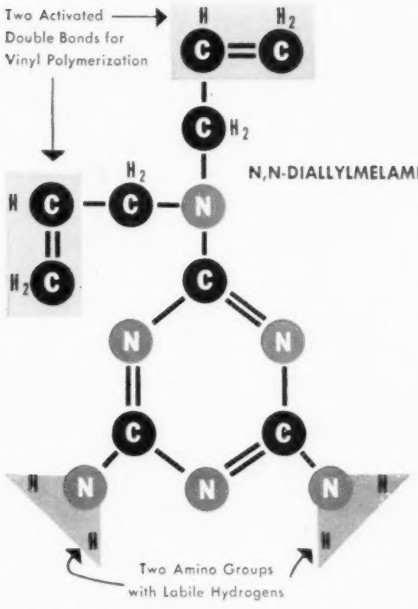
INTERPRETING THE CHEMIST'S WORK and its importance in our daily lives is no easy task. Cyanamid has found its on-the-spot Department Store Clinics highly effective in giving retail sales people—and through them, the consumer—a clearer understanding of the work of chemists in the improvement of textiles through modern finishes. CYANA® *textile finishes*, for example, make it possible to "tailor" fabrics for virtually any styling or use through such qualities as hand, water repellence, durability of nap and wrinkle resistance. Translating these chemical achievements into manufacture of fabrics and their proper use by consumers is an important part of Cyanamid's program.

(Organic Chemicals Division)

THESE PUPPETS "STOLE THE SHOW" during Paper Week at a novel introduction of Cyanamid's new HE (high efficiency) *Wet-Strength Process.*† Through this diverting device, advances in paper technology made possible by this new process were projected to 2000 A.D. Not only does the new HE Process use an average of 40% *less* wet-strength resin to produce papers fully equivalent in wet strength, it also provides a means of producing papers with properties never before obtainable. Details of this resin-saving process and its licensing can be secured through Cyanamid representatives.

(Industrial Chemicals Division)

†Patent applied for by American Cyanamid Company



THE COMBINED CAPABILITIES of vinyl polymerization, copolymerization and condensation in *N,N-diallylmelamine* lead to an unusually wide range of possible products with resin or polymer characteristics. The presence of two vinyl groupings in the same molecule offers the additional advantage of cross-linked products. Curable resins are formed when N,N-diallylmelamine is reacted with certain vinyl monomers. When reacted with acrylonitrile, a cross-linked product receptive to acid dyes is obtained. N,N-diallylmelamine-formaldehyde resins, prepared in alkaline solutions, are compatible with polyvinyl acetal or hydrolyzed polyvinyl acetate plasticizers. We will welcome your inquiry for samples and technical data.

(Market Development Department)

FINAL "COUNT-DOWN" on equipment before going on stream is made at Cyanamid's new plant for production of *aniline* at Willow Island, W. Va. This new fluid-bed catalytic reactor, first of its kind, adds 24 million pounds per year capacity to meet any foreseeable demand from the expanding industries concerned with aniline-based products. With existing capacity at Bound Brook, N. J., this additional production will assure dependable aniline service.

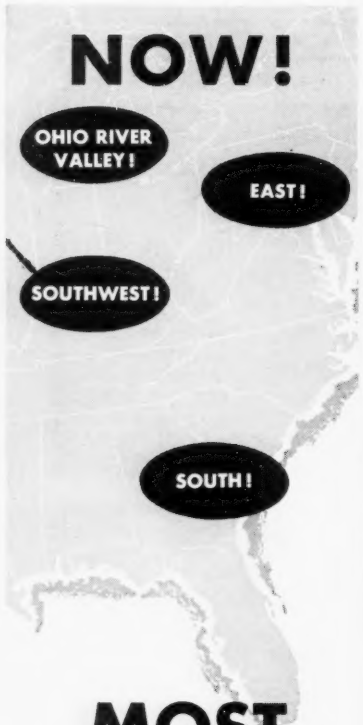
(Organic Chemicals Division)

CYANAMID

AMERICAN CYANAMID COMPANY

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

For further information on these and other chemicals, call, write or wire American Cyanamid Company



MOST
COMPLETE STOCK OF
STAINLESS STEEL!

Never-before coverage and service! Only the new association between Power Stainless Products Co., Passaic, New Jersey, and Stainless Piping Supply, Inc., of Charleston, West Virginia, brings such complete and prompt service in corrosive-resistant materials. Now just one phone call to one source gets you everything you'll ever need in four major industrial areas! Write today on your company letterhead for your copy of the most complete catalog ever assembled within two covers.

STAINLESS STEEL PIPE • VALVES
TUBINGS • FITTINGS
Complete Line of Stainless Steel Fastenings
"Specialists in Corrosion Resistant Materials"

POWER Stainless products co.
356 Harrison Street, Passaic, N. J. • GRegory 3-2100
2101 N. American St., Phila., Pa. • WAlnut 2-3688
STAINLESS PIPING SUPPLY, INC.
1037 Pennsylvania Avenue, Charleston, W. Va.
Dickens 6-0547

ADMINISTRATION

Liability Expanded

Specialty manufacturers marketing products for consumer use—particularly deodorant makers that have recently added new products—must be careful in making advertising claims. This is the warning apparent in a recent U.S. court of appeals decision against Carter Products, Inc. (New York).

The court decided, in effect, that a manufacturer has the duty to warn users of his products of any "foreseeable" ill effects that might occur. The decision further advances the present judicial trend of imposing stricter interpretations of the laws of product liability, particularly with respect to advertising and selling.

The litigation against Carter was brought Nov. 17, '54, by Mr. and Mrs. Roy Wright. Mrs. Wright sought $100,000 in damages for personal injuries suffered from the application of Arrid, an antiperspirant made by Carter. Her husband asked $15,000 for medical expenses and loss of services. Their suit charged that Arrid irritated Mrs. Wright's skin, was dangerous, contained an excessive amount of aluminum sulfate and had a toxic effect on the sweat glands.

In June '56, U.S. district court in New York ruled that the manufacturer was not negligent and that the injury resulted from Mrs. Wright's allergy and her contributory negligence in continuing to use the product after experiencing a slight rash.

The Wrights appealed the case in May '57. U.S. court of appeals in New York reversed the decision and remanded the case back to the district court for further findings. After a pretrial hearing before Federal Judge Edward Weinfeld in June '57, however, the parties reached an out-of-court settlement for an undisclosed amount.

In remanding the case, the appellate court called for consideration of these points:

- Since Carter was aware that certain persons are allergic to aluminum sulfate—based on past complaints—the company should have foreseen the danger of injury, and warned against it.
- A manufacturer has the duty to warn those few people who it knows cannot apply its product without injury. "Liability . . . for failure to discharge that duty by inserting appropri-

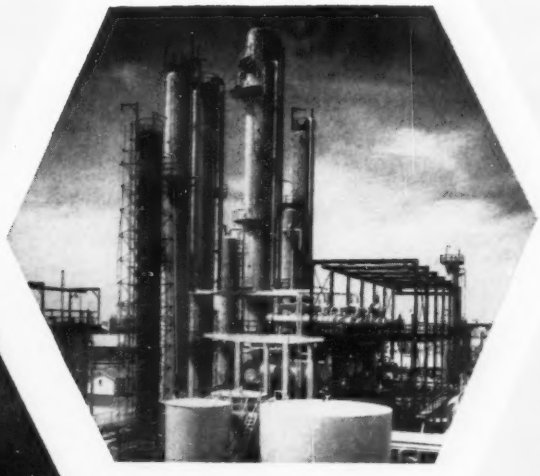
Borax
Boric Acid

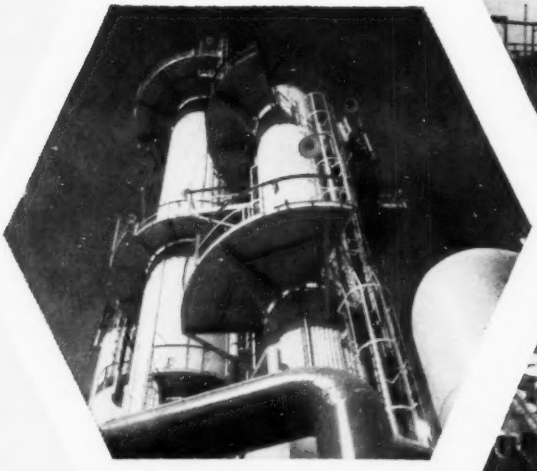
	GRANULAR	POWDERED	CRYSTAL	IMPALPABLE
TECHNICAL	●	●	●	●
U.S.P.	●	●		●
SPECIAL QUALITY (CP+)	●	●		

Ammonium Biborate
Ammonium Pentaborate
Anhydrous Borax
Anhydrous Boric Acid
FR-28®
Borax 5 Mol
Polybor®
Potassium Tetraborate
Potassium Pentaborate
Sodium Metaborate
Sodium Pentaborate
"Rasorite"® Anhydrous Sodium Borate Concentrates
"Rasorite"® Sodium Borate Concentrates

Information, samples and bulletins sent promptly on request. Direct inquiry to office nearest you.

United States Borax & Chemical Corporation
PACIFIC COAST BORAX COMPANY DIVISION
50 Rockefeller Plaza, New York 20, N. Y.
630 Shatto Place, Los Angeles 5, California





DELHI-TAYLOR
PETROCHEMICALS

the difference is in the processing

Controlled Processing at Delhi-Taylor's modern petrochemical plant is the key to high purity aromatics, aliphatics and petrosolvents. You'll find Delhi-Taylor nitration grade benzene and toluene to be sulfur and thiophene-free with exceptionally low paraffin content. Delhi xylenes and other petrochemicals also meet the most stringent specifications for purity and uniformity.

Dependable Service is another Delhi-Taylor extra. Barge, tank car and tank truck shipments are efficiently handled from our plant and bulk terminals to meet your processing schedules.

Send today for our new Specifications Folder.

DELHI TAYLOR

CHEMICAL DIVISION

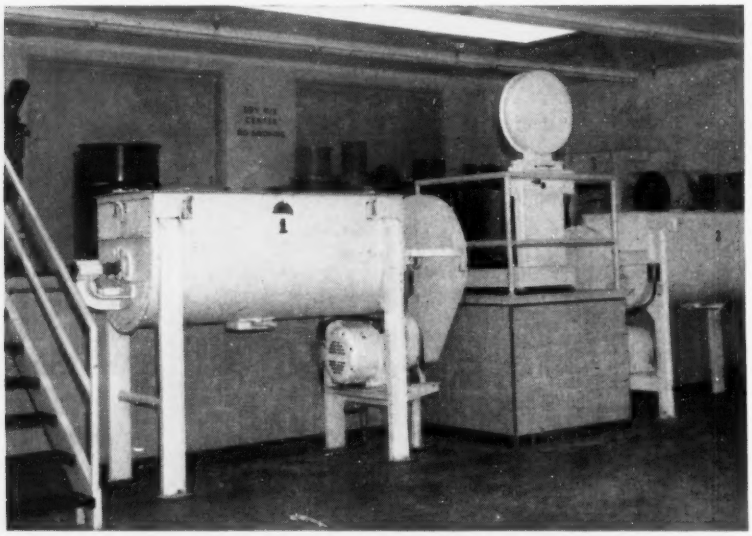
DELHI-TAYLOR OIL CORPORATION

415 MADISON AVE. • NEW YORK 17, N. Y.

DAY mixes

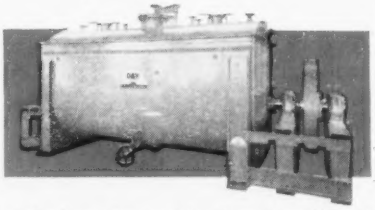
in the best companies

Fearn Foods Inc. is one of thousands of old friends. They've used DAY Ribbon Blenders for years in their Franklin Park, Illinois, plant.



When the decision on what make of blenders to buy for their new modern Los Angeles plant came up, they just ordered three more DAY blenders. The reason — simply that DAY blenders have always given dependable trouble-free service. They operate smoothly, rapidly and efficiently. Their many features include outboard bearings that provide sturdy support for a solid alloy steel shaft. Stuffing boxes of sanitary seals for protecting bearings, prevent product contamination. They have a geared head motor, roller chain drive, galvanized or stainless tank, choice of agitators. Heating or cooling jackets optional. There is a complete line of DAY ribbon blenders available in capacities of 10 to 465 gal.

On the right is a DAY mixer from the Jumbo line. These rugged brutes are built for extra heavy loads. Capacities 600 to 3850 gal. Complete lab facilities available for testing your product.



Join the many companies now enjoying the production benefits of DAY blenders and mixers. Write today for Bulletin 800.

The J. H. DAY Co.

Division of The Cleveland Automatic Machine Co.

SERVING THE PROCESS INDUSTRY SINCE 1887

4928 Beech Street, Cincinnati 12, Ohio

ADMINISTRATION

ate words of caution is rightly borne as one of the costs of producing and selling a commodity . . ."

• It was not essential that Mrs. Wright prove that reliance on Carter's assurances of safety was based on any single or specific advertisement or label.

The appellate court's comment: "It would seem sufficient for the plaintiff to establish that the defendant's repeated assertions of safety came to her attention and that she relied on them." This last point strikes at the heart of mass media advertising such as radio, newspapers and television.

KEY CHANGES

Gustav Lucie, to treasurer, Arner Co. (Buffalo, N.Y.), pharmaceutical manufacturer.

Paul J. La Marche, to director of production, U.S. Industrial Chemicals Co., division of National Distillers and Chemical Corp. (New York).

W. Horace Mason, to president and general manager; **H. P. Schrank,** to director; **A. P. Acheson,** to vice-president in charge of sales; **A. L. McMullen,** to vice-president in charge of production; **C. E. Jones,** to vice-president; and **D. N. Morris,** to secretary and controller; all of Seiberling Rubber Co. of Canada (Toronto).

Robert L. Seitz, to vice-president and sales manager, American Water Softener Co. (Philadelphia).

Robert E. Leber, to general sales manager, Ansbacher-Siegle Corp. (Staten Island, N. Y.), subsidiary of Sun Chemical Corp.

Robert L. Duncan, to sales manager, Union Carbide Chemicals Co., division of Union Carbide Corp. (New York).

Alex Lewis, Jr., to manager, petrochemicals department, Gulf Oil Corp.

RETIRED

Albert J. Frey, vice-president in charge of technical department, Hoffmann-La Roche (Nutley, N. J.).

DIED

Kenneth R. Brown, 61, retired vice-president, Atlas Powder Co. (Wilmington, Del.), at West Chester, Pa.

Here's why WEST END can answer your inquiry on product availability immediately!

When you phone an order or request information on current availability or long term supply of a product, the Sales Office Manager in Oakland with whom you speak can contact the plant at WEST END immediately. He talks by private wire teletype with the Production Manager. An answer or firm commitment is given immediately. It is relayed to you often while you are still on the phone.

WEST END's Sales Office Manager sales representatives and plant executives work together as a team manning a system that is, in our opinion, uniquely outstanding in the chemical industry. Their confidence in the efficiency of this system is reflected in the enthusiastic, helpful and friendly manner in which they promptly serve you . . . our customers.

WEST END CHEMICAL COMPANY
DIVISION OF STAUFFER CHEMICAL COMPANY
1956 WEBSTER, OAKLAND 12, CALIF. • PLANT, WESTEND, CALIF.

SODA ASH
SODIUM SULFATE
BORAX · HYDRATED LIME

Harshaw

ALUMINUM ISOPROPYLATE

(DISTILLED)

EFFICIENT INTERMEDIATE IN MANY REACTIONS SUCH AS:

1. Meerwein-Ponndorf Reactions
2. Alcoholysis and Ester Exchange
3. Formation in situ of Aluminum Soaps
4. Synthesis of higher Alkoxides, Chelates and Acylates

Properties

Formula Weight	204.23
Melting Point	118° C.
Boiling Point	145° C. at 7 mms.
Appearance	White Solid
Purity	99.7%

Soluble in benzol, chloroform, carbon tetrachloride, petroleum hydrocarbons, isopropanol. Easily hydrolyzed and alcoholized.

Make Harshaw your source for this useful intermediate which holds great promise as a building block in a host of reactions. Aluminum Isopropylate is the first in a series of Aluminum Chemicals offered by Harshaw for new exploratory research.

For more detailed information and sample contact New Products Division, The Harshaw Chemical Co., 1945 East 97th Street, Cleveland 6, O.

THE HARSHAW CHEMICAL COMPANY

1945 East 97th Street • Cleveland 6, Ohio

BRANCHES IN PRINCIPAL CITIES

HARSHAW

Technology
Newsletter

CHEMICAL WEEK
April 5, 1958

First public showing of Permyron colored stainless steel will be at the upcoming Design Engineering Show at Chicago's International Amphitheater. Developed by Electro Metallurgical Co., the Permyron process consists of roller-coating or spraying a pigmented coating onto specially prepared metal surfaces, then processing under controlled conditions of temperature and atmosphere.

Unique feature of Permyron-coated metal: it can be deep-drawn or bent without cracking surface color. To date, only black stainless steel has been produced commercially. But Electromet reports that the process shows promise of adding a range of colors to aluminum, plain carbon steel and other metals as well as stainless steel.

•

A highly optimistic future for columbium metal was pictured last week by Charles Hunt, manager of the joint-venture melting project of Stauffer, Temescal and Mallory-Sharon *(CW, Feb. 1, p. 48)*. Hunt told the San Francisco meeting of Pacific Southwest Mineral Industry Conference of American Institute of Mining, Metallurgical and Petroleum Engineers that his firm's electron-beam melting process "now appears to be a key step in the over-all process of producing columbium of high quality and potentially great usefulness."

He looked first at costs related to volume of production. At 5 tons/month, 50 tons/month and 1,000 tons/month, he foresees probable production costs and selling prices of $30/lb. and $50/lb.; $4.90/lb. and $9/lb.; $3.20/lb. and $4/lb., respectively.

To arrive at those figures, he took into account: costs of mining, moving, processing and reducing the ore to metallic form, purifying it in an electron-beam furnace, millworking and scrap-recycling costs.

He then looked at the size of the prospective markets, along with a rough timetable:

• Of immediate interest are markets for mill products at about $50/lb., a price that Hunt feels will be likely next year. That would put it into uses where there would be no competitive metal except tantalum.

The atomic energy program can use 5-25 tons/month as a reactor material. He sees a similar potential in military gas turbines if alloy developments move along satisfactorily. He also thinks that special corrosion-resistant jobs will open up in '59 for pure sheet and tube at $50/lb.

• The next round of markets should be tapped at a mill-product price of $15/lb. Markets here would largely be extensions of the $50/lb. market. Market for the lower-price metal: 50-250 tons/month.

• A drop to $10/lb. would stimulate chemical, electronic and special uses but would do little for military or nuclear applications. Estimated market: 70-350 tons/month.

• At $6/lb., marine, chemical and electronic applications might well consume 100-500 tons/month. Columbium might also find its way into automotive gas turbines, which would require 200-1,000 lbs./month.

Hunt recognizes that "caution is necessary in any attempt to develop the columbium business," cites the recent turnabout in titanium as one good example. And it should be remembered that because he is intimately involved in the new melting venture, his views are bound to be optimistic. But it is hard to disagree with his conclusion that "columbium appears to have an interesting future."

•

Dow's new extra-strong and stable cation exchange resin goes on the market this week. Called Dowex 50W, it's the first white high-capacity resin of its kind, a feature that should make it attractive to users of home water-softeners, Dow believes.

•

Kanamycin, Bristol Labs' new antibiotic *(CW, Nov. 30, '58, p. 65)*, is helping to fight a virulent staphylococcus infection outbreak in Houston even though the drug is not yet on the commercial market. It reportedly works where older drugs fail because the guilty staph strain (known as B/81) is resistant to them.

Other drug news this week:

Merck signed cancer research contracts worth $775,000 with the government.

Lederle showed off its new dichloroamethopterin, expected to be more effective against leukemia than is any other known drug.

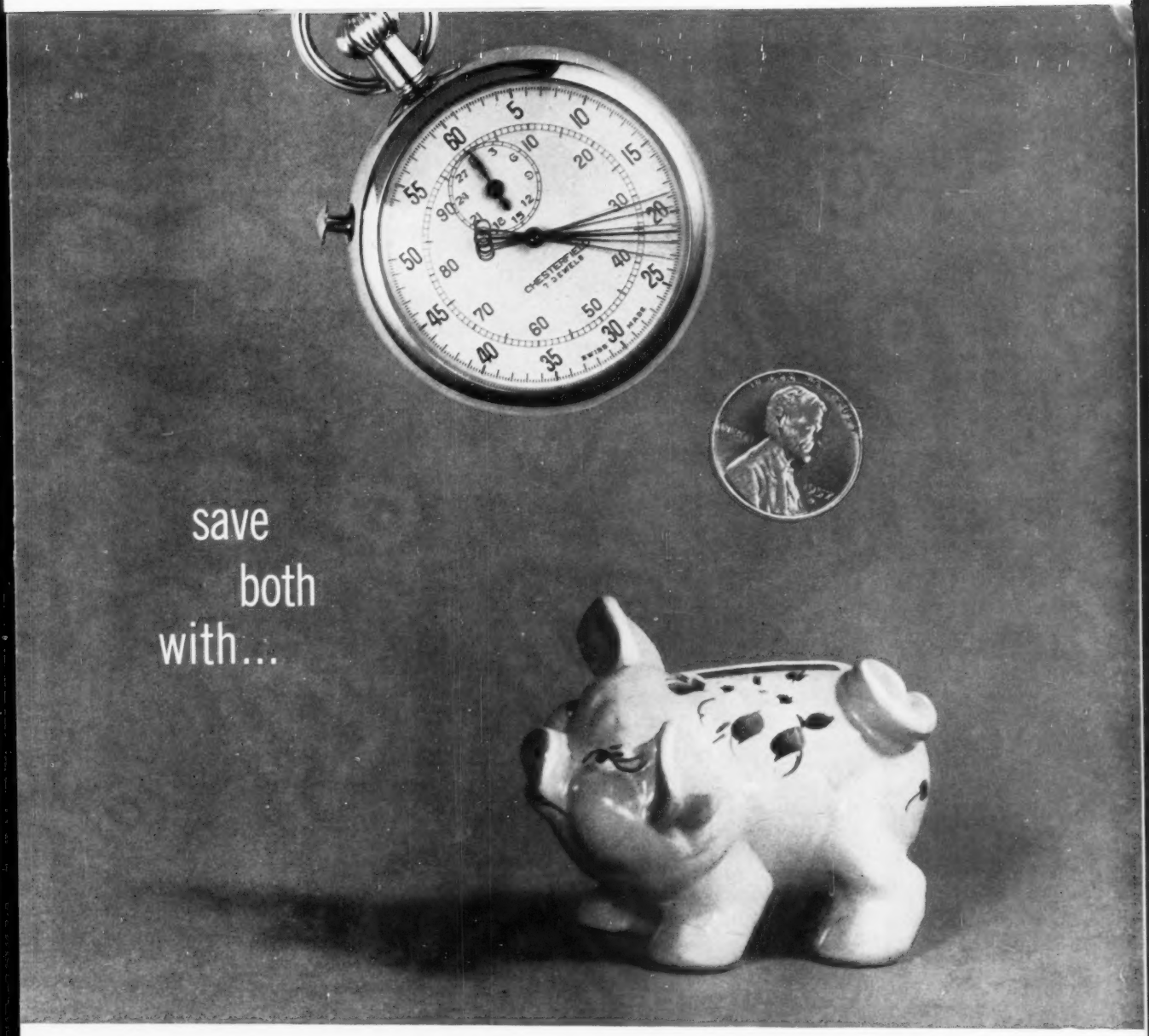
Parke, Davis introduced a new anesthetic, Sernyl [1-(1-phenylcyclohexyl) piperidine monohydrochloride], that induces temporary amnesia in patients besides making them insensible to pain.

•

A tranquilizer for plants? That's what U. S. Rubber is calling its Duraset-20W (N-meta-tolyl phthalamic acid), which goes commercial this week. According to U. S. Rubber, it helps a wide variety of plants (e.g., lima beans, cotton, greenhouse tomatoes) maintain yields despite wide swings in the weather such as sudden heat or cold spells, prolonged rain or drought. Codevelopers of the drug, chemist Allen Smith and plant pathologist Albert Feldman, both of the firm's Naugatuck Chemical Division, also point out that the new chemical is economical to use. In tests on cotton in California's Imperial Valley application costs ranged from $7 to $9/acre. Yield increases were valued at $30-90/acre above this figure.

•

A new plant to make beryllium hydroxide from beryl will be built by Mineral Concentrates, Inc., on a site at Loveland, Colo., 50 miles north of Denver. Construction will start immediately. The $250,000 plant is due to start up in June. Beryl from Crystal Mountain area will supply the plant; five companies are reported planning to mine it. Mica will be separated from the beryl at the Loveland plant.



Paraformaldehyde

This free-flowing flaked solid is 91% available formaldehyde. Its high reactivity permits greater resin output . . . over 30% larger batches with existing equipment. And cycles are ⅓ shorter . . . reflux and dehydration steps are cut by hours!

New Installations No need for heated storage tanks or large tankage areas. Larger resin output per kettle . . . lower steam, electricity and cooling costs result. Write Celanese for complete technical data and prices.

Celanese®

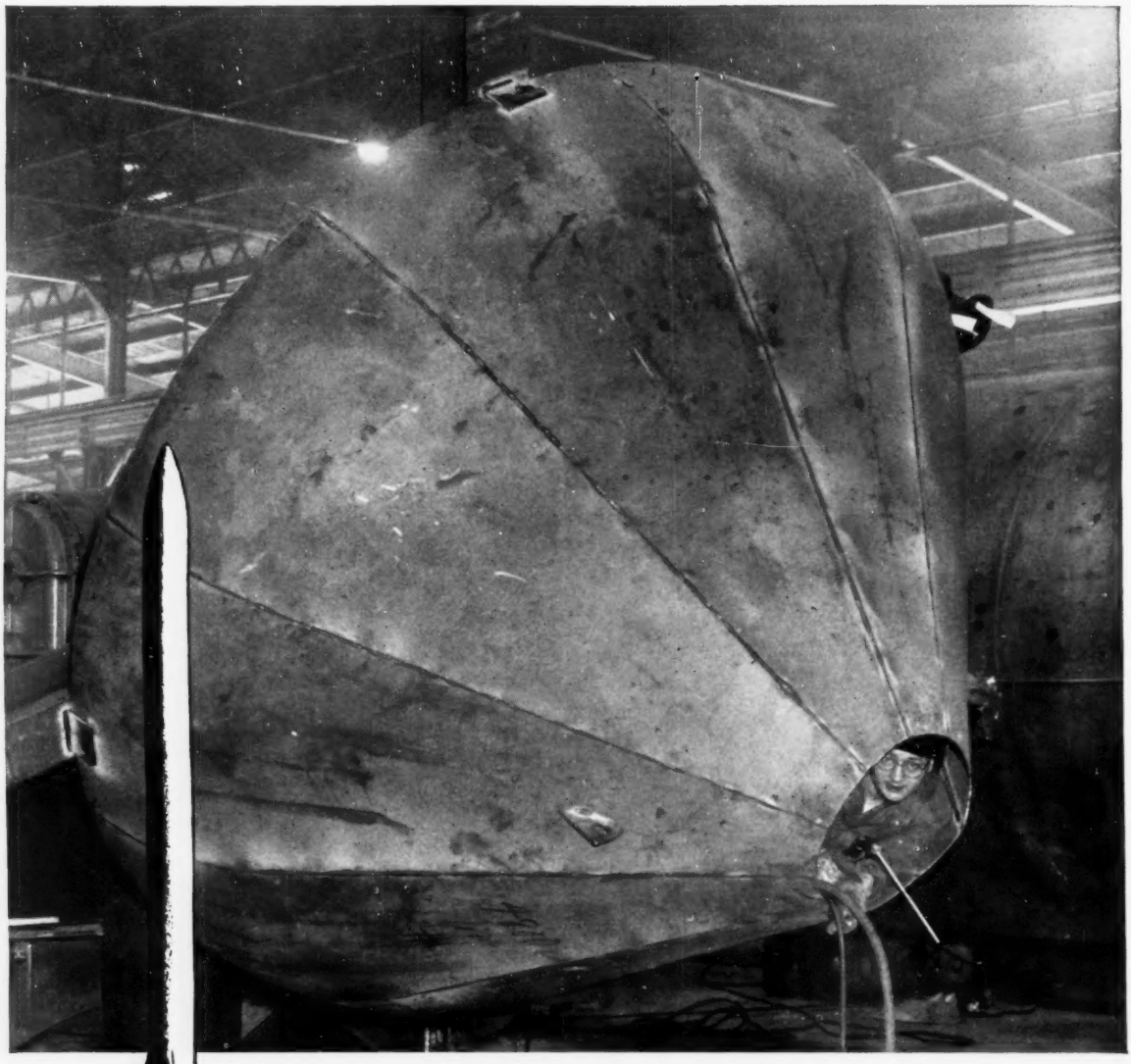
Paraformaldehyde . . . a Celanese intermediate

CHEMICALS

Celanese Corporation of America, Chemical Division, Dept. 552-D, 180 Madison Avenue, New York 16.

Export Sales: Amcel Co., Inc., and Pan Amcel Co., Inc., 180 Madison Avenue, New York 16.

See Chemical Materials Catalog and Chemical Week Buyers' Guide for complete listing of Celanese Chemical Products



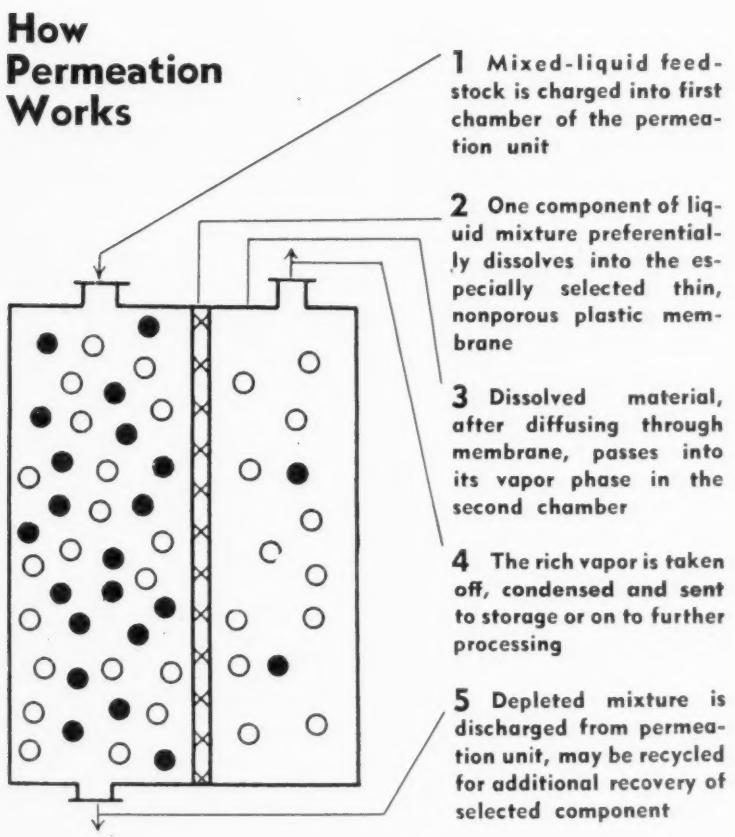
STAINLESS...for Moon Travel Tests?

The results of this welder's work may well be headed for the moon someday. For here his skills are being applied to a stainless steel component of ground propulsion test equipment as part of the missiles program. There can be no question about test equipment standing up. Hot formed from Type 347 stainless, this unit, one of a number, was welded and X-ray tested with Graver's modern techniques. When exacting design for missile testing is linked with Graver's skilled alloy fabrication, there's assurance of the quality demanded—in the same manner that Graver has served industry for over a century.

GRAVER®
ALLOY DIVISION

Building for the Future on a Century of Craftsmanship in Steels and Alloys

GRAVER TANK & MFG. CO., INC.
EAST CHICAGO, INDIANA
New York • Philadelphia • Edge Moor, Delaware • Pittsburgh
Detroit • Chicago • Tulsa • Sand Springs, Oklahoma • Houston
New Orleans • Los Angeles • Fontana, California • San Francisco


How Permeation Works
1 Mixed-liquid feedstock is charged into first chamber of the permeation unit
2 One component of liquid mixture preferentially dissolves into the especially selected thin, nonporous plastic membrane
3 Dissolved material, after diffusing through membrane, passes into its vapor phase in the second chamber
4 The rich vapor is taken off, condensed and sent to storage or on to further processing
5 Depleted mixture is discharged from permeation unit, may be recycled for additional recovery of selected component

New Way to Split a Mix

American Oil Co. (Texas City, Tex.) this week unveils its new technique of separating liquid mixtures. Dubbed permeation, it's reportedly ready for commercial applications in petroleum refineries and chemical plants, is expected to be simpler, cheaper to operate than some processes currently employed for difficult liquid-liquid separations.

To date, American Oil has investigated more than 50 different separations in bench-scale and pilot-scale permeation equipment. It has successfully split such hard-to-separate mixtures as isopropanol, ethanol and water, nonaqueous azeotropes, and many hydrocarbon mixtures. And while the company hasn't exhausted the list of potential applications, it has amassed sufficient evidence to indicate that permeation will be a useful addition to a broad range of chemical and petroleum processes.

Selective Membrane: The real heart of the permeation unit is a thin (0.001 in.), nonporous membrane in which one component of the liquid mixture is preferentially soluble. The equipment is basically very simple and, therefore, less costly than complex, multiplate columns frequently required for azeotropic distillation. Essentially, the unit consists of a single steam-jacketed vessel, divided into two chambers by the membrane (*see cut above*). Here's how it works:

Mixed liquids are fed into one chamber, which is pressurized to maintain the material in the liquid phase at the operating temperature. The preferentially soluble component dissolves in the membrane material, passes through it by a process called activated diffusion. When the liquid reaches the other side of the membrane, it's vaporized under slightly reduced pressure in the second chamber. The relatively pure vapor is then simply taken off, and condensed. It's ready for storage or any further processing.

The unseparated mixture, depleted in one component, is discharged from the liquid chamber for recycle to the process, or for transfer to a second stage of permeation.

Flexible Operation: An important advantage of permeation is its adaptability to a wide variety of operating conditions. American Oil researchers have studied permeation in different pH ranges, including acidic, but haven't pinpointed the range where pH becomes a limiting factor.

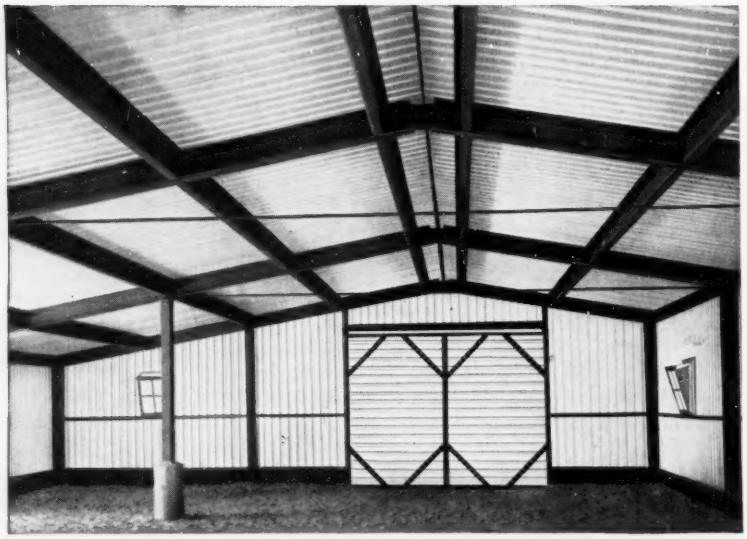
The key variables determining the rate and selectivity of the permeation processes are film composition, film thickness, temperature and pressure. The operation is primarily controlled by the choice of film. This, in turn, must be determined from physical characteristics—solubility properties and molecular structure*—of the liquids to be separated. And experimental operation is generally required, says American Oil, to guarantee a proper film selection.

For developmental work, the company has produced a large variety of membrane films, including many modifications designed for specific separations. But, it's still too early, the company feels, to disclose the exact chemical composition and method of making the films.

Reliable Operation: Despite the apparent fragility of the vital permeation membrane, American Oil reports that problems of film rupturing and of maintaining film stability have been solved. The membrane can be supported to withstand the operating pressure differential, will withstand abuse except for pricking by pointed objects.

Experimental films exhibit long operating life, have stood up under continuous operation in excess of five months without signs of chemical breakdown or physical failure. And

*Some of the more technical aspects of permeation will be presented in detail at the upcoming American Chemical Society meeting in San Francisco.



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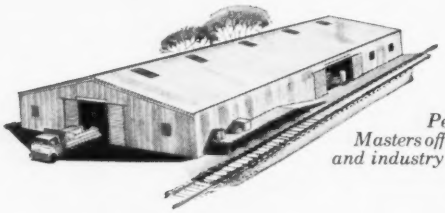

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films are easy to change; 8-hour shift could replace a 650-sq. ft. membrane.

Operating Economy: Low capital and operating costs are other important points in permeation's favor. For comparison, American Oil matched the economics of membrane permeation vs. azeotropic distillation with hexane for drying isopropanol. The estimated investment for a two-tower azeotropic distillation system ($100,000) is 31% greater than that of permeation equipment ($76,000); annual operating costs are 15-16% higher for azeotropic distillation. Based on a feed rate of 10,470 lbs./stream-day of isopropanol (dry basis), total annual operating and capital costs come to $44,230 for the permeation process, $54,740 for azeotropic distillation.

The process design and economic evaluation of one application,† says American Oil, has already proved the attractiveness of the process. Some other suggested uses: recovery of aromatics from hydrocarbons mixtures, separation of hydrocarbon isomers, improving the octane number of gasoline boiling range fractions, separation of mixed organic chemicals.

Research Reactors

Oak Ridge National Laboratory last week started up a new $5-million nuclear reactor—the Oak Ridge Research Reactor (ORR). One of its primary jobs: to supply engineering data on the effect of nuclear radiation on fuel-element and structural material (CW, March 29, p. 49).

Key features of the ORR design: flexibility, which permits many types of experiments close to the core; core accessibility, which permits entire fuel systems (rather than single samples) to be placed in the high-flux region.

The reactor is fueled with enriched uranium plate-type elements of aluminum-clad uranium-aluminum alloy, is designed to operate at a power level of 20-30 megawatts (heat). Average thermal neutron flux will be greater than 1×10^{14} neutrons/sq.cm./second.

Engineering experiments planned for the new facility include:

- Dynamic loop tests to determine effects of radiation on fluid fuels and engineering equipment.
- Irradiation of fluid fuels in suffi-

†Based on information obtained in bench-scale permeation equipment, American Oil has made a process design for a commercial installation charging 15,600 lbs./day of a ternary azeotrope of isopropanol, ethanol and water.

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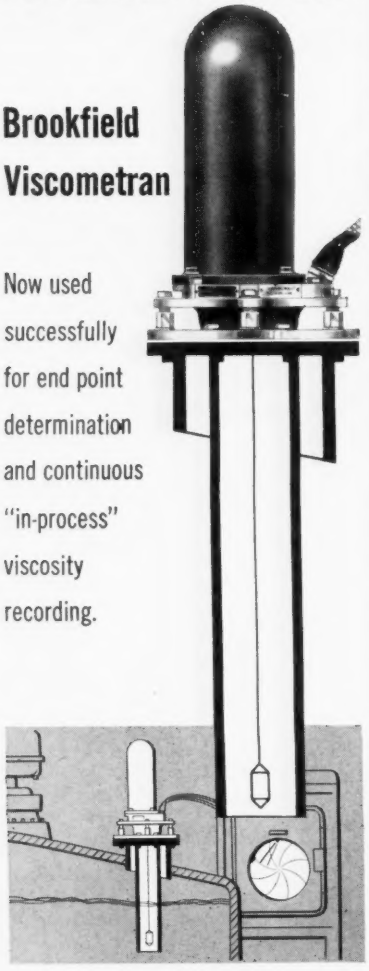
POLYMERIZATION NEWS

Brookfield Viscometran

Now used successfully for end point determination and continuous "in-process" viscosity recording.



Successful "in-process" viscosity measurements have been reported for polystyrene, polyvinyl acetate, polyurethane resins, and urea-formaldehyde resins.

Brookfield's process mounted viscometer, the Viscometran, has been used to chart the course of polymerization and to signal correct end point. Its use has eliminated the need for constant sampling, assured greater product uniformity, and guarded against run-away reactions. Its service in applications having pressures from vacuum to 100 psi where gas purging is possible has been remarkably trouble free and dependable. Unaffected by variations in liquid level, and easy to clean, the Viscometran continuously and accurately senses viscosity — a variable that can very well be fundamental in your process.

For new application data sheet write or wire:

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cient quantity to permit chemical studies of continuous fuel-reprocessing systems.

• Basic studies on properties of metals, alloys and ceramics under intense irradiation.

In addition to its research and engineering functions, the ORR will also be employed for the production of such commercial radioisotopes as iron-59, chromium-51, iridium-192, cobalt-60, phosphorus-32, sodium-24, and gold-198.

Plutonium Data: To gather similar engineering data on plutonium as a nuclear fuel, AEC's Hanford Laboratories (Richland, Wash.) will this spring start construction of a $15-million test reactor. Because plutonium-bearing fuels have received little study, the new Hanford reactor will be made flexible enough to permit studies of control characteristics and reactor operating problems of uranium-plutonium fuel systems. It will also turn out irradiated fuels for pilot-plant studies and economic evaluation of chemical reprocessing and refabrication systems.

PROCESSES

New Aluminum Route: The Wolchov Aluminum Mill in U.S.S.R. is claimed to be the world's first plant to produce aluminum from nephelin, a sodium-potassium-aluminum silicate ore. Nephelin is obtained during the making of phosphate-based fertilizers from apatite ore.

To get aluminum from nephelin, the ore is first agglomerated with limestone to obtain aluminum oxide, soda-potash solutions and mud; the oxide is then electrolytically—and conventionally—converted into aluminum. (The soda-potash can be used in the glass industry. The mud is used at Wolchov in production of cement.) Crucial point in the new method is the effective filtration of the agglomerate, for which a new vacuum filter unit—claimed to be much more efficient than conventional filters—was designed.

•

Shale Oil: Scottish Oils, Ltd. (subsidiary of British Petroleum, Ltd.) is experimenting with a new method of obtaining oil from shale deposits. The plan is to drill the shale horizontally, then ignite the oil and condense the resulting gases at ground level into crude oil. First results of tests are expected within two months.

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Isoflow Furnaces efficiently perform two important heating functions, depending upon the butadiene process involved:
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- Series, Multipass, all parallel flow
- Excess Draft for High Overload

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Market Newsletter

CHEMICAL WEEK
April 5, 1958

What's the worldwide rubber situation? A full analysis of it was presented in New York late last week at the Commercial Chemical Development Assn.'s 14th annual meeting. Highlights:

• Some outlets may be lost to U.S. producers as synthetic capacity soars in East and West Europe; the Soviet bloc, too, is pushing production. Capacity in the latter group this year is about 462,000 tons; by '60, it will have reached 650,000 tons.

• Natural rubber production will probably not go much above 1.9 million tons/year over the next five years. "Guesses" are that the U.S. market in '62 will still be split about as it is today: 35% natural, 65% synthetic. But for the rest of the world, the ratio will change from '58's 78% natural and 22% synthetic to a '62 breakdown of 66% natural and 34% synthetic.

• In Dec. '57, U.S. synthetic capacity (either in place or building) was slightly more than 1.5 million tons, some 45% higher than installed capacity in May '55 when government-owned plants were sold to private industry. All facilities are not, by any means, operating at capacity but indications are that by '65 domestic market requirements may overtake installed capacity.

•

Worldwide price of basic aluminum is down about 2¢/lb. as the result of the market-jolting cut of roughly this amount by Canada's Aluminium Ltd., late last week.

Most U.S. producers hesitated briefly while "evaluating" Aluminium's action, but when Aluminum Co. of America snapped back Friday (March 28) with a full-2¢/lb.-lower primary pig tag of 24¢/lb., others, including Reynolds, Kaiser Aluminum and Anaconda, followed quickly.

And it didn't take long for the pencil-wielding to spread. By early this week, aluminum prices were down in England, Europe and the Far East.

It wasn't spelled out in the Canadian firm's initial announcement, but the reduction appears to have a twofold purpose: a competitive slap at lower-cost aluminum that's been pouring into world markets from Russia and the Soviet bloc *(CW, March 22, p. 23)*; an attempt to get fabricators with whittled inventories back into a buying mood.

Although price-cut talk in the trade has been negligible (hence, the industry's surprise at Aluminium's action), it has been no secret that aluminum capacity, especially in the U.S. and Canada, has long been outstepping demand *(CW, Dec. 15, '56, p. 79)*.

•

A powder form of triple superphosphate can now be produced at Davison Chemical's Bartow, Fla., plant. Processing and storage facilities

costing nearly $1.5 million have been installed to turn out the "run of pile" material particularly designed for processors requiring a product with a "high rate of ammoniation." Output of the powder superphosphate will supplement the W. R. Grace Division's granulated production.

The additional process, however, doesn't raise the over-all production total of the plant; capacity was originally rated at 200,000 tons/year of triple superphosphate, but that figure, says the company, "has been considerably exceeded in operation."

•

Add 24 million lbs./year to the nation's total aniline capacity. That's how much American Cyanamid's new, now-operating "multimillion-dollar catalytic" plant at Willow Island, W. Va., is designed to produce.

U.S. aniline production has fluctuated erratically over the past few years, but has been in a dive since '55's high output of 135 million lbs.; '57 production, for instance, dropped to about 106.5 million—some 55 million lbs. under the country's new capacity total.

•

New nitrogen storage facilities are in operation at Houston, Tex., and Tulsa, Okla. Built by Linde as additional supply bases of industrial gases (e.g., nitrogen, oxygen, argon, etc.), they complete a network of nitrogen distribution facilities serving the Gulf Coast area.

The installations (designed like giant Thermos bottles, to hold liquid nitrogen at 320 F below zero) will be filled by railroad tank cars from the company's nitrogen producing plant at Houston. Capacity of the storage centers: more than 1 million cu. ft. at Houston; slightly less than a million at Tulsa.

•

Some varnish resin prices are lower this week. Reason: To meet "scattered price competition." Cost of production hasn't declined any, says Hercules Powder, but new prices of its Pentalyns A, G and X (down 1½¢/lb.) and Pentalyns 802A, 802A Pale, B25 and Ester Gum 8L (reduced 1¢/lb.) are tabbed to "help the profit and competitive positions of Hercules' customers."

SELECTED PRICE CHANGES — WEEK ENDING MARCH 31, 1958

	Change	New Price
UP		
Calcium phenolsulfonate, drms.	$0.20	$0.99
Molasses, blackstrap, feed grade, tanks, New Orleans	0.005	0.14
Potassium ferrocyanide, drms., ton lots	0.015	0.245
Sodium phenolsulfonate, USP, gran., drms.	0.02	0.50
Zinc phenolsulfonate, NF, gran., drms.	0.01	0.44

All prices per pound unless quantity is stated.

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- **GLYOXAL, 30%** *(O=CH–CH=O)*—imparts water resistance to casein, animal glue, zein, gelatin, and other proteins. Its reaction with the protein, collagen, is used in tanning leather. Because Glyoxal insolubilizes polyhydroxy materials, it is used to impart water resistance to latex-based paints and films.

- **GLUTARALDEHYDE, 25%** *($O=CH(CH_2)_3CH=O$)*—reacts with proteins over a wider pH range than glyoxal. The presence of three carbon atoms between the aldehyde groups imparts more flexibility to the finished product.

- **2-HYDROXYADIPALDEHYDE, 25%** *($O=CH–CH(OH)–(CH_2)_3CH=O$)*—is highly reactive due to the presence of a hydroxyl group as well as two aldehyde groups. This chemical is used in production of felt; in starch adhesives; and in textile finishes.

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How Britain's Chemical Imports Shaped Up in 1957

	Quantity (long tons)		Value (pounds sterling)
	1956	1957	1957
INORGANICS			
Acids	3,087	2,987	185,957
Aluminum oxide abrasives	25,209	23,068	1,440,309
Arsenic trioxide	5,551	3,294	98,193
Borax, refined	23,250	25,727	1,018,918
Calcium carbide	53,383	64,572	2,485,320
Carbon blacks (not acetylene black)	12,629	13,597	1,389,430
Cobalt oxides	591	386	483,196
Iodine	212	423	366,048
Mercury	663	616	1,526,337
Potassium carbonate	4,271	5,381	353,305
Other potassium compounds (not fertilizers)	3,688	4,721	429,641
Selenium	88	64	695,275
Silicon	6,016	5,618	949,109
Silicon carbide abrasives	11,546	9,539	981,542
Sodium, calcium, potassium, lithium	3,663	1,203	199,391
Sodium chlorate	4,580	5,443	366,331
Sodium phosphate	1,053	294	33,825
Other sodium compounds	14,563	16,668	1,206,720
Miscellaneous inorganics	—	—	3,029,078

	Quantity (long tons)		Value (pounds sterling)
	1956	1957	1957
ORGANICS			
Acids and anhydrides (incl. salts and esters)	—	—	2,872,247
Glycerine	4,942	5,378	659,948
Menthol	45	73	322,913
Glycol ethers and ether-esters	2,874	3,116	616,727
Sodium compounds, organic	5,677	6,687	1,417,752
Styrene, monomer, gal.	3,461,590	1,658,744	829,151
Vinyl acetate, monomer	9,313	4,902	570,758
Dyestuffs intermediates	456	1,405	971,003
Misc. organic compounds	—	—	12,024,730
DRUGS	—	—	7,802,008
FERTILIZERS			
Basic slag	91,673	110,318	906,112
Potassium chloride	552,653	537,554	8,919,243
Potassium sulfate	12,915	15,718	308,323
All others	—	—	1,847,383
PLASTICS			
Vinyl resins	6,215	8,645	2,208,783
Other resins	9,694	13,637	3,774,559
Molding powders	1,489	4,088	1,631,946
Sheets, rod, tube, film, foil	5,745	6,928	6,259,100

U.S. Recession: Tocsin for British Traders

Britain's chemical industry is closely watching the U. S. recession because, say the British, "it's obvious that the Americans will push their exports harder if they are having a bad time at home." This scrutiny means tougher competition for U. S. exporters, both in Britain and in other countries where these two nations compete for markets.

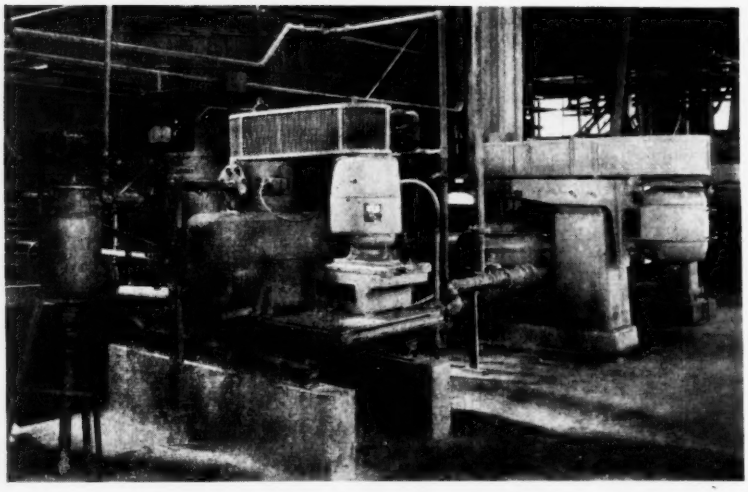
The expected British push for foreign markets isn't primarily caused by the U. S. recession, but it's intensified by the economic climate here. One big reason for the drive is that British imports are growing faster than are their exports—a problem that plagues many other countries as well (*CW, March 22, p. 73*). And British chemical sellers—even more than U. S. marketers—face sharpened competition in world chemical markets from chemical producers on the Continent—especially those in the Soviet bloc.

Plan of Action: Clear evidence that Britain will soon act to strengthen its foreign sales position came last month from Sir David Eccles, president of Britain's Board of Trade. In the British publication, *The Economist,* he is quoted as saying that if and when the time does come for the British to take action against a slump, there "will be general agreement that the first relaxation should be concentrated on strengthening our power to earn more abroad."

Presumably, notes *The Economist,* Sir David will stop short of suggesting export subsidies, although he might be thinking of measures almost that strong. But a better way to strengthen Britain's exports, continues the magazine, would be to assure availability of international funds for buying the chemicals (and other products)

Here's a Combination That Makes Short Work of Fine Classification

From left to right in flowsheet order is a Merco Rotary Strainer monitoring feed to the Merco A-24 Separator; Model C-30 Centrifuge is shown right; and behind is a Merco CX-16 Centrifuge classifying hectorite in same manner.



A striking example of how a Merco Centrifugal Separator Combination can be utilized to advantage is the installation at a large midwestern chemical company where extra fine grade bentonite clay is produced.

In this beneficiation process, the clay, after a primary rough cut, is fed to a Merco A-24 Centrifugal Separator for secondary classification. Final cut is made in a high speed Merco Model C-30 Centrifuge which produces the consistently high quality end product.

It's a good plan to talk to Dorr-Oliver about your new ideas whenever a process involves any phase of the separation of finely divided solids in suspension . . . or ion exchange . . . or fluidizing techniques. Chances are that Dorr-Oliver and its world-wide organization can help you.

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that Britain might export. And it's hinted, hopefully, that a recent visit of Britain's top economists to Washington might have included discussion of what the International Monetary Fund will do to keep worldwide purchasing power high, even if the recession should deepen.

U. S. Chemical Exports: Already, roughening competition in world markets has been felt by U. S. marketers. Recent U. S. Dept. of Commerce studies show that U. S. exports dropped 10% in Jan. '58, compared with those in the same month in '57. Although other industries bore the brunt of the cutback, the U. S. chemical industry didn't escape unscathed.

It is still too soon to determine whether the trend of last year—whereby U. S. chemical exports to Britain increased—can be continued. Britain-bound shipments in '57 amounted to $68.5 million, compared with $62.5 million in '56. It was a significant upswing, but not enough to match the $73.5-million sales in '55.

Export Plateau? How well is the British chemical industry prepared to battle for export markets? The industry is "cautiously optimistic" about its '58 prospects; but there is a general admission that it is "in a state of flux." And this feeling of uncertainty is reflected in widely varying opinions about probable British chemical exports in '58.

In '57, Britain exported a record $748 million worth of chemicals and allied products — $96 million more than in '56.

Some British observers now believe that, despite the need to fight harder for export markets, their chemical industry is reaching an export plateau, that '58 shipments will likely be about the same as in '57. Others predict a small rise in exports. Still others are pessimistic, say a 5% drop in '58 wouldn't be surprising. The latter view is particularly significant if there's truth in recent allegations that some British chemical companies are now selling products abroad without profit—just to hang on to their markets.

Expansions Unabated: The U. S. chemical industry's ability to sell its products to the British is influenced, of course, by Britain's ability to expand its own productive facilities.

Britain's chemical industry has the largest expansion program of all the

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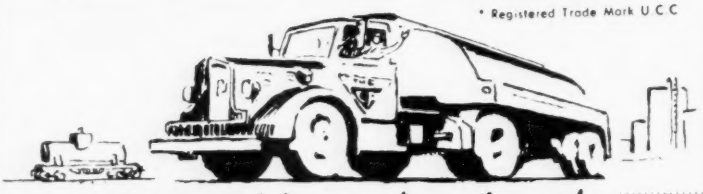

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nation's industries; during the next five years, all major chemical manufacturers will be involved in big development programs. Biggest developments will be in petrochemicals.

In '57, British chemical companies spent $336 million on capital development, are now planning five years ahead for domestic and export demands.

The British plastics industry, for example, will increase output considerably in the next few years. Current production is near 400,000 tons/year, will be increased about 30% in the next two or three years. Major increases will be in manufacture of polyethylene, polyvinyl chloride and polystyrene.

By '60, say British sources, five top companies will be producing some 130,000 tons/year of polyethylene. Domestic demand is expected to increase, but the industry will also seek bigger foreign outlets, especially in Australia, Canada, Africa, India and New Zealand.

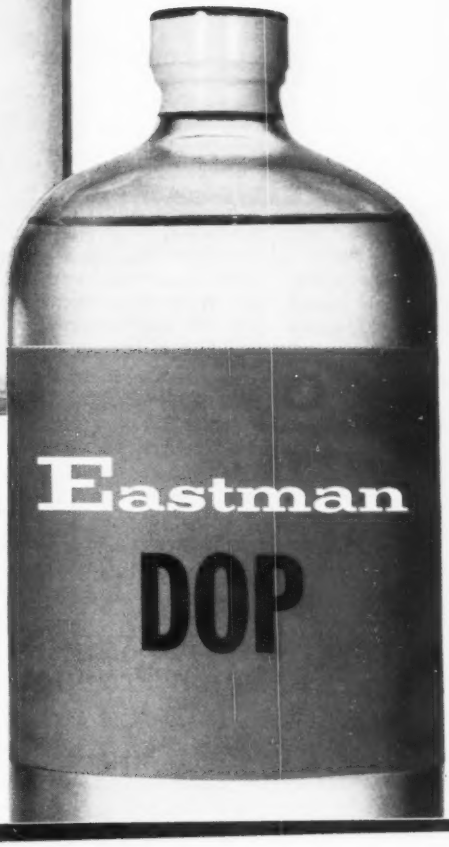
U. S. chemical producers will be affected to varying degrees by these developments in Britain. The British trade problem is, of course, but one facet—though a good example—of worldwide business pressures that are now thrusting one nation after another into heavy international sales competition *(CW, March 15, p. 73)*.

Complicating the international trade picture are many divergent factors. One is the mounting fear in Britain that the European free-trade area will never take shape unless ways of implementing it are found soon. And, while Britain tries to tailor the free-trade area to its satisfaction, an increasing number of U. S. observers are voicing anxiety that the European "Common Market" is a threat to U. S. foreign trade.

Meanwhile, much of the Western world ponders the common concern that the Sino-Soviet bloc isn't fooling in its efforts to turn the cold war into economic channels. Trade agreements piling up between the Communists and many Western nations underscore Khrushchev's candid warning that the Soviets are declaring a trade war—especially on the U. S.

Continuing emergence of such global maneuvering for trade virtually augurs that few U. S. chemical producers will be able to escape the rough times ahead.

Can you put all these labels on the DOP you're using?



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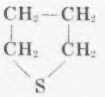
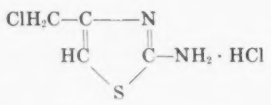


We had an inquiry from a gas company for tetrahydrothiophene. Feeling a little glum that day and aware that we cannot be expected to make 10 grams of each of the half-million-plus organic compounds that have been proved capable of existence, we politely declined the gas company's offer. Back they bounced for a second try, asking for 100 grams or $100 worth, whichever would be less. That constituted pressure. It also showed we were dealing with a party who understands the facts of life. We forgot the $100 limit and shot the works.

We took a lot of *1,4-Dichlorobutane* (Eastman 5658) and sodium sulfide and put them into a solvent **chosen by experience.** We heated to a temperature and for a time, both chosen by experience. By steam distillation we separated the oily product from the solvent and the sodium chloride formed. The water-soluble material was then decanted and purified by distillation to BP 118-119 C. The job went rapidly, and the yield was excellent, amounting to five pounds of tetrahydrothiophene. It smells something like indene. The five pounds cost us only $A. Five grams might well have cost the same.

Only in form was this transaction the sale of a certain chemical at a meaningless $B per pound. In reality our persistent customer was buying a service which would either find the right reaction solvent, time, and temperature to produce what he wanted or else would silently take the loss if the entrepreneurs' judgment or execution proved faulty. Furthermore, we didn't even make him pay the whole shot but undertook to market *Tetrahydrothiophene* as Eastman 7516, searching for other buyers (as we do by these very lines) to share the cost with him. The list price is $18.55 per 100 grams.*

• • •



If an auto manufacturer can give you a choice of 50 models to ride around in, why shouldn't we add *2-Amino-4-(chlormethyl) thiazole Hydrochloride* to the long line of reagents available for detecting **nitrite ions** with? Hearing no answer, we now offer it as Eastman 7527. The article we read says the amino group speedily diazotizes and then swiftly couples (it doesn't say how) to make a red dye which comes down as a thick precipitate. One microgram is the empirical limit of nitrite detection, yet a saturated solution of sodium nitrate gives no color. That's what they claim. It just happens that we bought this reagent from a very reliable professor of organic chemistry who used it only to convince his students, and you can have it for $4.60 for 25 grams.

* If A were given, you could compute B/A, a ratio that most widely held corporations disclose only for the business as a whole. A copy of our 1957 annual report will gladly be sent by Eastman Kodak Company, Public Relations Department, Rochester 4, N. Y.

• • •

After this one, Mike Brethen's pay checks will have to follow him around in his retirement. He joined us right out of the Army in 1919 and wound up no less a craftsman than the old fellow who gets $65 for a pair of shoes. Rather than on a last or lathe, Mike's **craftsmanship** has been expressed over a big stoneware crock of acid with ice floating in it as sodium nitrite diazotizes an aromatic amine, after which he adds the resultant diazonium salt to the cuprous salt of whatever halide is required and gets an oily layer containing his aromatic halide. A Swiss chemistry lecture assistant named Sandmeyer proposed this eight years before Mr. Brethen's birth. Since many full-grown adult organic chemists despair of professional advancement from doing Professor Sandmeyer's reactions over and over again, a clear field was left Mr. Brethen to specialize in doing it very well.

On his last day at work he sat down and figured out he had run exactly 50 different versions of the Sandmeyer, counting the displacement of diazonium by iodine, which needs no copper.

Take *m-Dibromobenzene*. What could be simpler? Yet the other day we had a request for it from a man who is so eminent that organic chemists everywhere know his surname only as the designation for a certain green textbook 4½ inches thick. He couldn't find *m-Dibromobenzene* on the market, and he apparently thought it wise to let an expert make it, so the job fell to Mike Brethen. Now, therefore, it becomes Eastman 7276.

One of the very last Brethen preparations was *4-Bromo-1,2-dichlorobenzene* (Eastman 7301). We had nothing special in mind, but he had done so well with *1,2-Dichloro-4-iodobenzene* (Eastman 7283) for quality and yield that we had to get just one more out of him before he escaped and left the Sandmeyers to his pupils.

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Cal Ink's Graham and Brandes push for new profits in the West.

To Sell More Ink, They Boost Research

For the printing ink industry, 1958 is another fiercely competitive year, with 200 or more manufacturers fighting for a chunk of the $250-million market.* A top contender, California Ink Co., is banking on research to secure its pre-eminent position among Western inkmakers. In a new $400,000 research laboratory, adjacent to the company's main plant at Berkeley, Calif., Cal Ink is expanding an already-sizable research program.

The scope of Cal Ink's research is indicated by a project it has carried on for two years with Stanford Research Institute—developing a special magnetic ink for Erma (Electronic Recording Machine — Accounting). These machines are already used in some banks. Checks and deposit slips with magnetic-ink code numbers and branch-bank numbers are fed into the machine, which makes all the calculations and sorts checks by account numbers. As many as 1,000 checks are handled in 90 seconds.

Although the company intends to concentrate on ink research, it is also looking to new fields—e.g., plastics, and raw materials for paints and paper coatings. Some projects occupying Research Director William Parle and his 35-man staff:

- New urethane foams. One looks promising as insulation for chemical storage tanks and buildings.
- Polymers for producing clear packaging coatings that may be overprinted.
- A process for making a flake pigment dispersion for the carbon-paper industry.
- A universal color dispersion suitable for all types of paint and color systems.
- A new process for refining phthalocyanine blue and green, a new type of organic yellow for printing inks and a new type of red pigment for lithography. Work is also in progress on a new organic yellow for paper.
- A technique to manufacture a wax-lead shielding compound for atomic energy installations.

In addition, Cal Ink researchers are seeking to learn if fluorine can improve existing vehicles.

Price Tag: According to Parle, the company's research spending (about $300,000/year) is divided equally between developing new products and improving existing ones. Cal Ink recently started making phthalocyanine blue and green pigments for inks and paints. And it's now producing naphthoic acid reds and beta-oxine for the lithography.

A portion of this new pigment production is for internal use—closer

*For a picture of the printing ink business see *CW, June 1, '57, ff. 88-94.*

quality control is one advantage the company has gained from captive production.

Plant Sites: Cal Ink's main plant at Berkeley includes a large varnish plant and a chemical color plant as well as its ink manufacturing operations. The varnish plant produces many of the vehicles used in ink and paint; the chemical color plant (the only plant of its kind west of the Rockies) provides much of the colors used by Cal Ink.

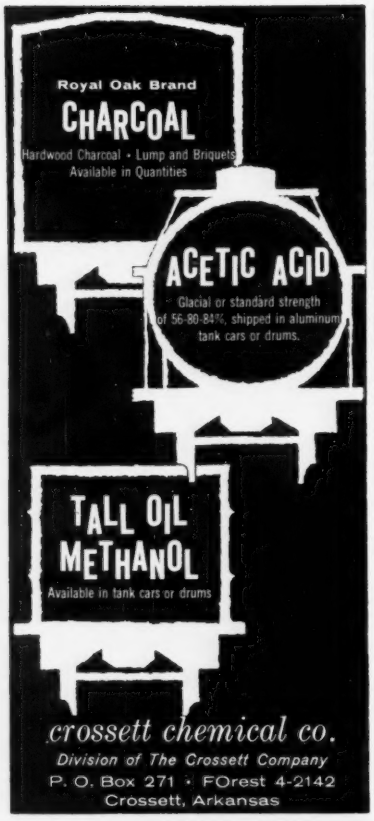
Smaller manufacturing operations are in Los Angeles, Seattle, Portland, Salt Lake City and Vancouver, B. C. Other branches are in Phoenix, Spokane, Sacramento, San Diego and Honolulu.

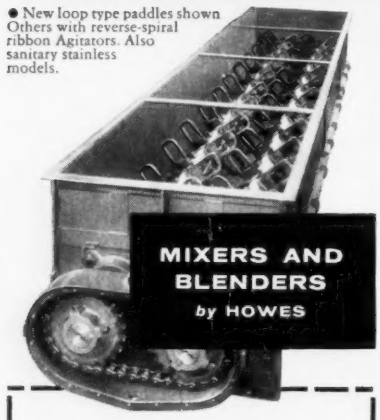
Cal Ink's competitive position is hard to peg. Because government figures on the printing industry are incomplete, ink companies and other suppliers have been unable to make effective use of them. But Cal Ink believes it's the fourth- or fifth-largest inkmaker, ranking below Interchemical Corp. (New York), Sinclair & Valentine (division of American Marietta), Frederick H. Levey (New York) and Howard Flint (Detroit).

Pointing at Problems: Although Cal Ink is located on the West Coast, it shares the problems of Eastern-based inkmakers. Ink manufacturing is, to a large degree, a custom service. This means that inkmakers have relatively small inventories of finished goods and part of production must be handled on a small batch-rush basis. Some ink companies, including Cal Ink, are increasing their efforts to merchandise a standard line of press-ready inks in a simplified color range, but such merchandising programs are applicable only to a small segment of the total ink market.

There are other industry-wide problems, too. National Assn. of Printing Ink Makers has pointed up, for example, the trend by large packaging and label printing companies to make their own inks. Rising prices of dyes and pigments is a perennial headache. Cal Ink makes most of the colors it uses, isn't seriously affected on the latter count.

Special Problems: There are special problems for the Western inkmaker, too. For one, the Western market for book and magazine inks is relatively small and slow-growing. Practically all printing of books,





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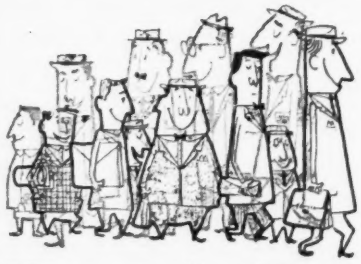

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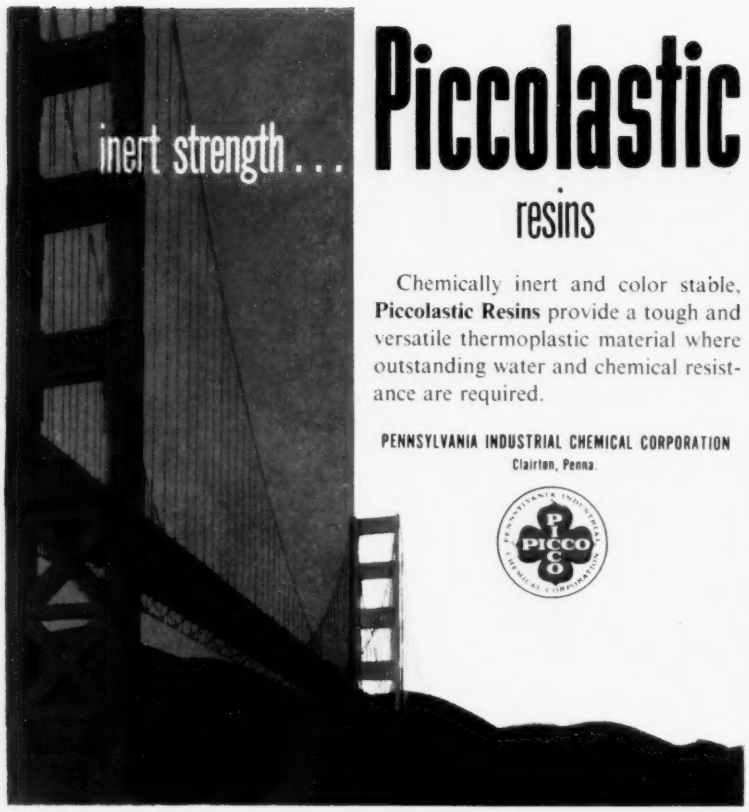

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SPECIALTIES

magazines, etc.—a hefty share of the printing ink market—is done in the East. Labels and packaging represent the biggest market for printing inks in the West. Consensus is that it will be a long time before the publishing business will attain great importance in the West.

Another problem of the Western inkmaker occurs when an Eastern-headquartered packaging firm buys out an independent Western company. Purchasing is often taken over by Eastern headquarters; Western suppliers often lose. And Eastern paper-converting companies that build new plants in the West generally buy their ink from Eastern suppliers.

Because it has no ink plants east of the Rockies, Cal Ink finds it impractical to try to compete in the East with companies that maintain nationwide distribution. The obvious solution—going national—isn't easy. Cal Ink has no such plans.

Chairman of the Board Chalmers C. Graham, a lawyer, and President William H. Brandes, a veteran in the ink industry, now in his 52nd year with the 67-year-old company, tie Cal Ink's planning to the current economic situation. Though sales improved slightly in '57 over '56 ('57, $16.8 million; '56, $15.3 million), profit margins were an unexciting 4% ('57 net: $768,000; '56, $699,000).

To brighten the picture, the company has—in addition to building new research facilities—made extensive organizational improvements, initiated budgetary controls.

Despite problems, President Brandes is optimistic. He's confident that the emphasis on packaging will continue—and, in turn, continue to boost ink demand. "I don't think we've seen the start of this printing ink business yet," says Brandes. He foresees increasingly difficult technical demands, is convinced that vigorous research is the key to future success for inkmakers.

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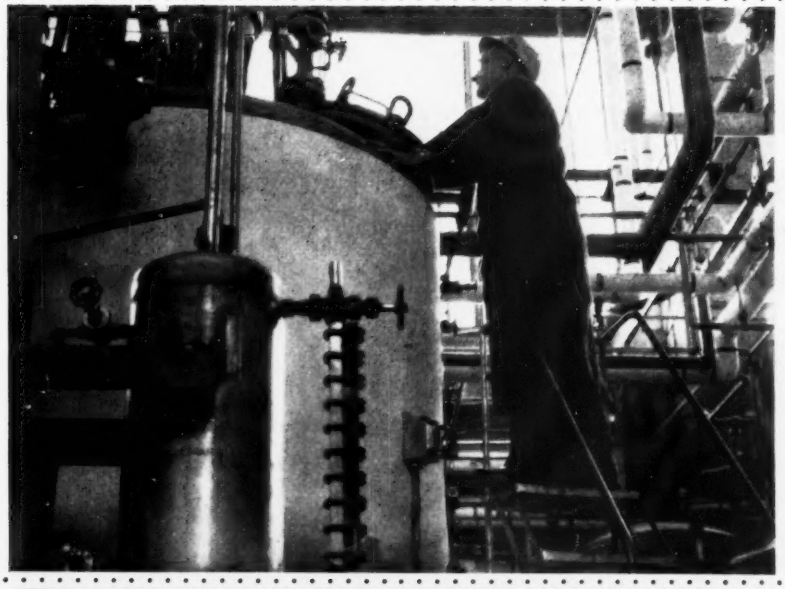

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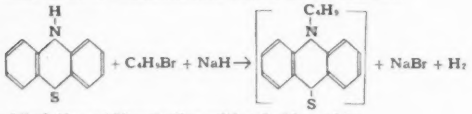

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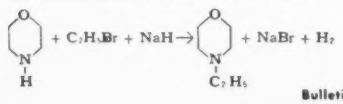

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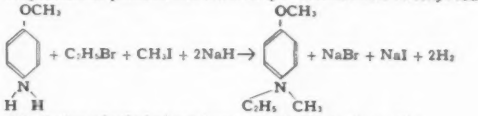

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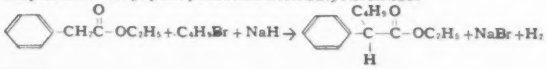

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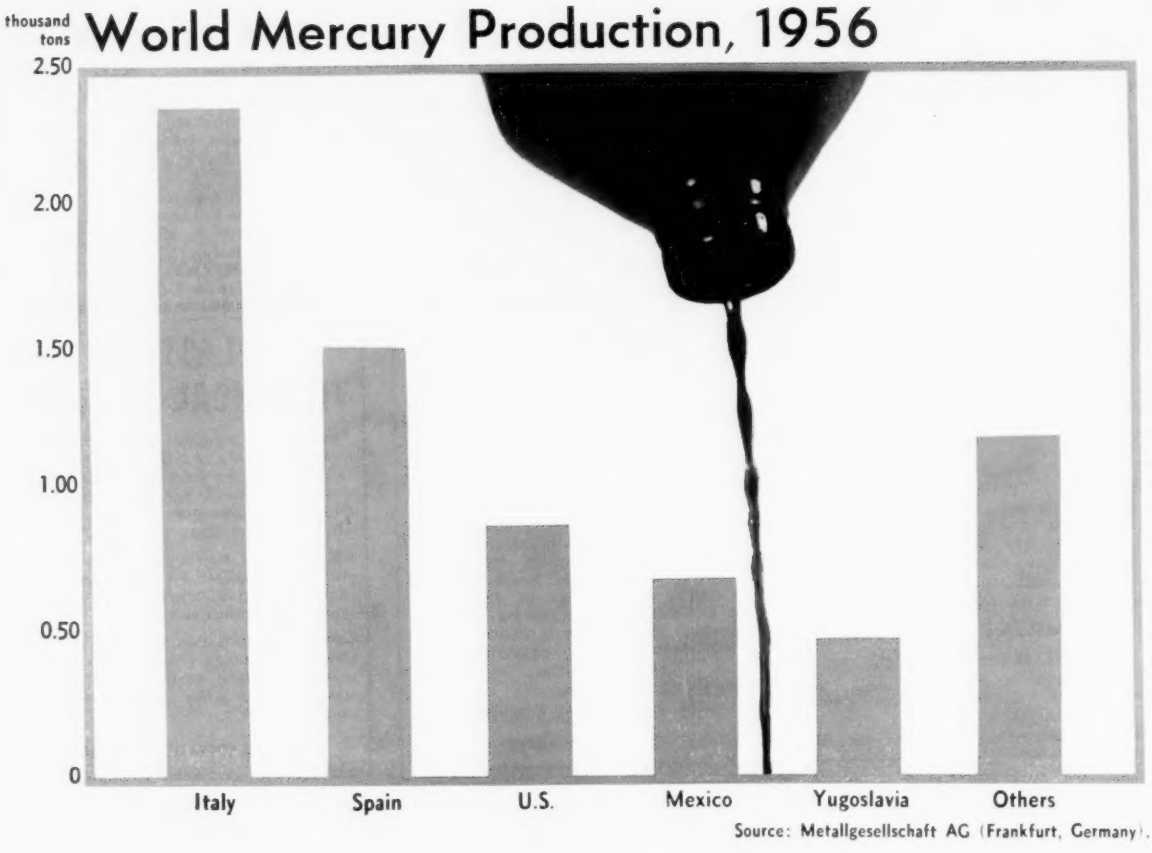

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Danger Signal in Latest Mercury Recap?

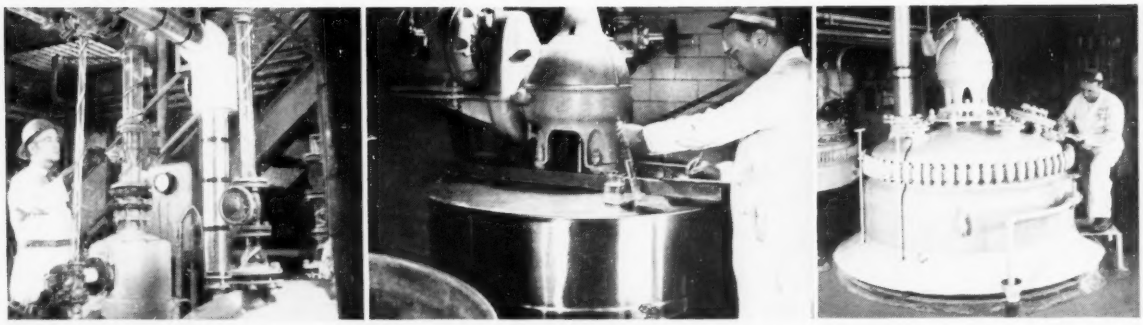
This week in Washington, the Tariff Commission is seeking to determine whether tariff relief is needed by domestic mercury producers. Recent import figures show why the matter is of current concern.

Last year, the U. S. imported some 1,700 tons of mercury; only about 1,200 tons were produced here. This is, however, a situation somewhat more encouraging than in '56, when the U. S. brought in about 1,900 tons, made only 907 tons locally. Bulk of imports both years came from Italy and Spain.

Both years, consumption was about 2,000 tons. Manufacture of agricultural chemicals required 18% of this; some 17% of total demand was used for making catalysts. Other important outlets: electrolytic preparation of chlorine and caustic soda; manufacture of industrial and control instruments, and pharmaceuticals and dental products.

Latest compilation* puts '56's world mercury output at 7,200 tons, an all-time high for the decade. In '56, Italy was leader in world production of the metal, with 2,350 tons. Spain produced 1,540 tons; Mexico, 740 tons; Yugoslavia, 500 tons; U.S.S.R., 495 tons; China, 183 tons.

*By Germany's Metallgesellschaft AG, (Frankfurt, Germany).



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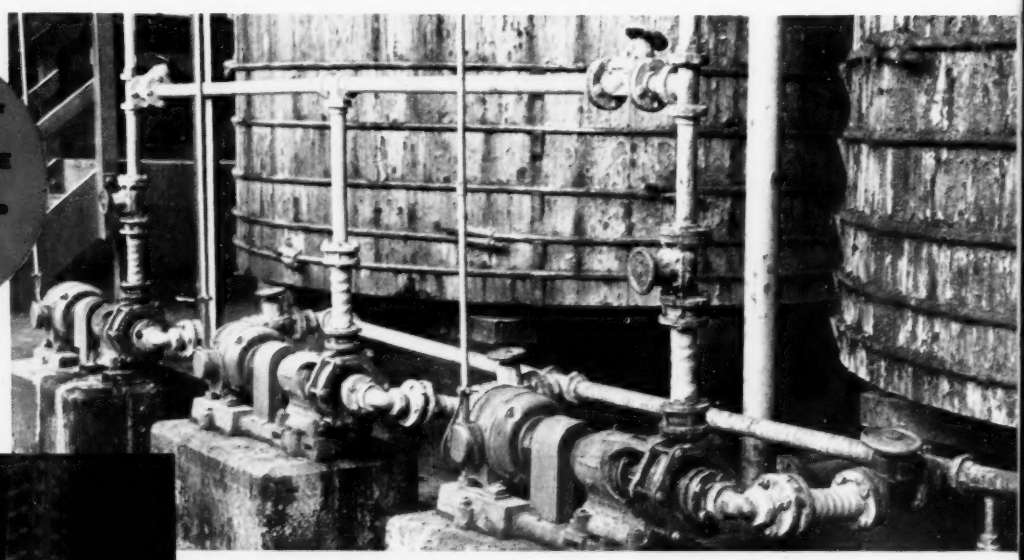

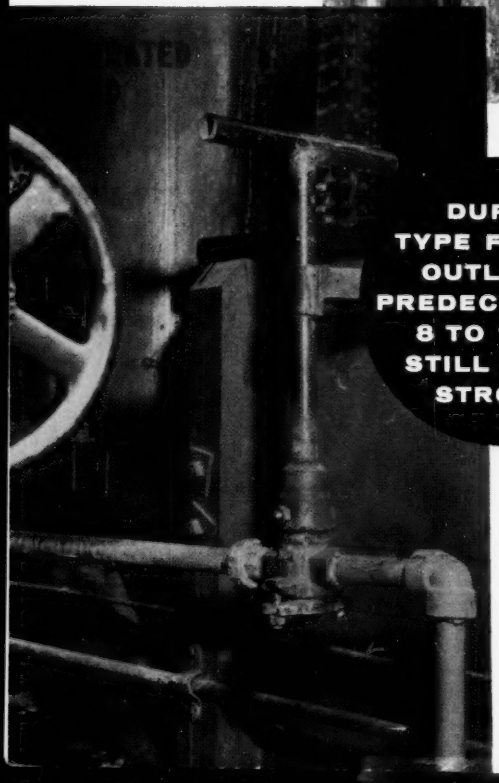

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